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FLOOD INSURANCE STUDY

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ROCKINGHAM COUNTY, VIRGINIA
UNINCORPORATED AREAS
VOLUME 1 OF 3

SEPTEMBER 29, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER - 510133

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TABLES OF CONTENTS

Table of Contents--Volume 1

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgements	1
	1.3 Coordination	2
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	5
	2.3 Principal Flood Problems	5
	2.4 Flood Protection Measures	16
3.0	ENGINEERING METHODS	16
	3.1 Hydrologic Analyses	17
	3.2 Hydraulic Analyses	23
4.0	FLOOD PLAIN MANAGEMENT APPLICATIONS	24
	4.1 Flood Boundaries	24
	4.2 Floodways	24
5.0	INSURANCE APPLICATION	68
	5.1 Reach Determinations	68
	5.2 Flood Hazard Factors	69
	5.3 Flood Insurance Zones	69
	5.4 Flood Insurance Rate Map Description	83

BEST COPY AVAILABLE

Table of Contents--Volume 1 (Continued)

	Page
6.0 OTHER STUDIES	83
7.0 LOCATION OF DATA	84
8.0 BIBLIOGRAPHY AND REFERENCES	84

FIGURES

Figure 1 - Vicinity Map	3
Figure 2 - Flood Photograph	6
Figure 3 - Flood Photograph	6
Figure 4 - Potential Flood Heights on Mill Creek	7
Figure 5 - Potential Flood Heights on Mill Creek	7
Figure 6 - Potential Flood Heights on Congers Creek	8
Figure 7 - Potential Flood Heights on Muddy Creek	8
Figure 8 - Potential Flood Heights on Muddy Creek	9
Figure 9 - Potential Flood Heights on the South Fork Shenandoah River	9
Figure 10 - Potential Flood Heights on the North River	10
Figure 11 - Potential Flood Heights on Linville Creek	10
Figure 12 - Potential Flood Heights on Linville Creek	11
Figure 13 - Potential Flood Heights on Cooks Creek	11
Figure 14 - Potential Flood Heights on Pleasant Run	12
Figure 15 - Potential Flood Heights on Pleasant Run	12
Figure 16 - Potential Flood Heights on Pleasant Run	13
Figure 17 - Potential Flood Heights on Stony Run	13

BEST COPY AVAILABLE

Table of Contents--Volume 1 (Continued)

Page

FIGURES - continued

Figure 18 - Potential Flood Heights on Stony Run 14

Figure 19 - Flood of 1942 on Elk Run 14

Figure 20 - Potential Flood Heights on Elk Run 15

Figure 21 - Potential Flood Heights on Wolf Run 15

Figure 22 - Floodway Schematic 68

TABLES

Table 1 - Summary of Discharges 17 - 22

Table 2 - Floodway Data 26 - 67

Table 3 - Flood Insurance Zone Data 70 - 82

EXHIBITS

Exhibit 1 - Flood Profiles

North Fork Shenandoah River	Panels 01P-11P
Little Dry River	Panels 12P-20P
Runion Creek	Panels 21P-25P
Capon Run	Panels 26P-28P
German River	Panels 29P-34P
Bennett Run	Panels 35P-40P
Crab Run	Panels 41P-44P
Overly Run	Panels 45P-47P

Table of Contents--Volume 2

South Fork Shenandoah River	Panels 48P-57P
Naked Creek	Panels 58P-61P
South Branch Naked Creek	Panels 62P-64P
Dry Run	Panels 65P-74P
Elk Run	Panels 75P-81P
West Swift Run	Panels 82P-87P
Wolf Run	Panel 88P

BEST COPY AVAILABLE

Table of Contents--Volume 2 (Continued)

EXHIBITS - continued

Exhibit 1 - Flood Profiles

Lee Run	Panel 89P
Hawksbill Creek	Panels 90P-95P
East Hawksbill Creek	Panels 96P-100P
Big Run	Panels 101P-102P
Madison Run	Panels 103P-105P
Onemile Run	Panels 106P-108P
Twomile Run	Panels 109P-112P
Cub Run	Panels 113P-122P
Boone Run	Panels 123P-130P
Quail Run	Panels 131P-140P

Table of Contents--Volume 3

Bloomer Spring Run	Panel 141P
Stony Run	Panels 142P-147P
Shoemaker River	Panels 148P-152P
North River	Panels 153P-164P
Mill Creek	Panels 165P-166P
Congers Creek	Panels 167P-169P
Pleasant Run	Panels 170P-172P
Duck Run	Panel 173P
Cooks Creek	Panels 174P-178P
Blacks Run	Panels 179P-180P
West Fork Cooks Creek	Panel 181P
Sunset Heights Branch	Panel 182P
Dry River	Panels 183P-190P
Muddy Creek	Panels 191P-196P
Buttermilk Run	Panel 197P
Snapp Creek	Panel 198P
War Branch	Panel 199P
Linville Creek	Panels 200P-204P
West Fork Creek	Panels 205P-206P
Joes Creek	Panels 207P-208P
Smith Creek	Panels 209P-218P
Mountain Run	Panels 219P-220P
Dry Fork	Panels 221P-224P
South River	Panel 225P
Briery Branch	Panels 226-231
Mossy Creek	Panel 232

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EXHIBITS - continued

Exhibit 2 - Flood Boundary and Floodway Map Index
Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
ROCKINGHAM COUNTY, VIRGINIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the unincorporated areas of Rockingham County, Virginia, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Rockingham County to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

This Flood Insurance Study was prepared by compiling pertinent information for the flood hazard areas in Rockingham County from existing technical and/or scientific data originally prepared by others for purposes other than the National Flood Insurance Program (NFIP). This existing data was reviewed by FEMA prior to its use in the development of this Flood Insurance Study to ensure compliance with NFIP accuracy requirements.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by the Soil Conservation Service during the course of several reports for major watersheds in Rockingham County. The Soil Conservation Service Flood Hazard Analyses were completed in April, September and October 1974, February and March 1977, and August 1978. The Soil Conservation Service Flood Plain Management reports were completed in July 1979, July 1982, and August 1983.

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1.3 Coordination

On April 26, 1985, the results of the study were reviewed at a final CCO meeting attended by representatives of FEMA and Rockingham County.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Rockingham County, Virginia. The City of Harrisonburg and the Towns of Bridgewater, Broadway, Dayton, Elkton, Mt. Crawford, Grottoes, and Timberville were not included in this study. The area of study is shown on the Vicinity Map (Figure 1).

The following streams were studied by detailed methods: the North Fork Shenandoah River from the downstream county boundary to the confluence of the German River; the Little Dry River from its confluence with the North Fork Shenandoah River to State Route 818; Runion Creek from its confluence with the North Fork Shenandoah River to the upstream county boundary; Capon Run from its confluence with the North Fork Shenandoah River to State Route 259; the German River from its confluence with the North Fork Shenandoah River to the confluence of Cold Spring River; Bennett Run from its confluence with Crab Run to State Route 824; Crab Run from its confluence with the North Fork Shenandoah River to the upstream county boundary; Overly Run from its confluence with Bennett Run to approximately 810 feet downstream of State Route 823; the South Fork Shenandoah River from the downstream county boundary to the confluence of the North and South Rivers; Naked Creek from its confluence with the South Fork Shenandoah River to the confluence of South Branch Naked Creek; South Branch Naked Creek from its confluence with Naked Creek to just upstream of State Route 606; Dry Run from its confluence with the South Fork Shenandoah River to approximately 5.6 miles upstream; Elk Run from the downstream county boundary to approximately 1.18 miles upstream of State Route 624; West Swift Run from its confluence with Elk Run to just downstream of State Route 628; Wolf Run from its confluence with Elk Run to approximately 0.4 mile upstream; Lee Run from its confluence with Elk Run to approximately 0.4 mile upstream; Hawksbill Creek from its confluence with the South Fork Shenandoah River to approximately 6.4 miles upstream; East Hawksbill Creek from its confluence with Hawksbill Creek to a point approximately 1.8 miles upstream; Big Run from its confluence with the South Fork Shenandoah River to approximately 0.94 mile upstream of U. S. Route 340; Madison Run from its confluence with the South Fork Shenandoah River to approximately 3.1 miles upstream; Onemile Run from its confluence with the South Fork Shenandoah River to approximately 1.1 miles upstream; Twomile Run from its confluence with the South Fork Shenandoah River to approximately 1.9

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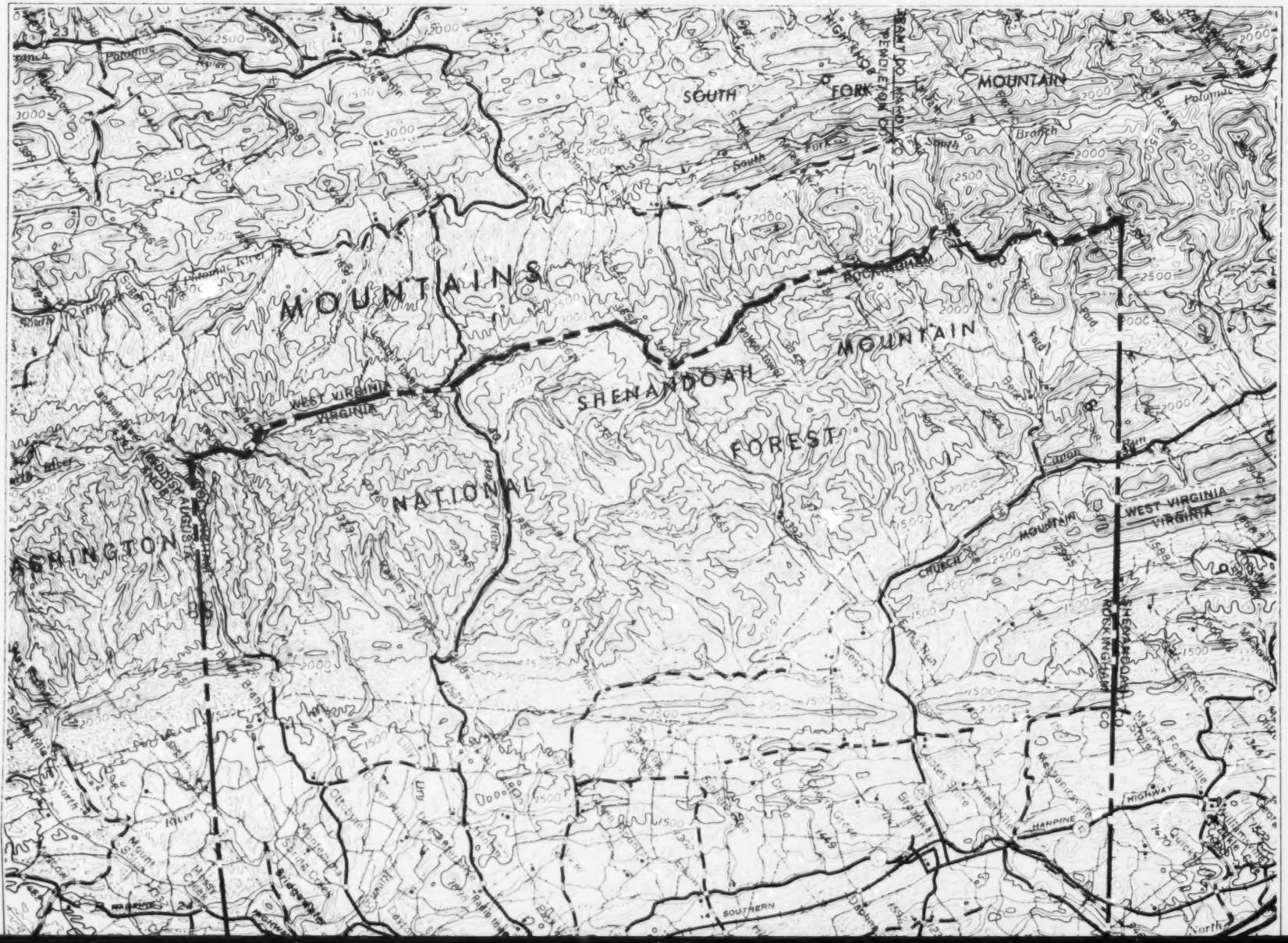
MOUNTAINS
SHENANDOAH
NATIONAL
FOREST
SOUTH FORK MOUNTAIN
MOUNTAIN
ROCKINGHAM
WEST VIRGINIA
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PENDLETON
ARMINGTON
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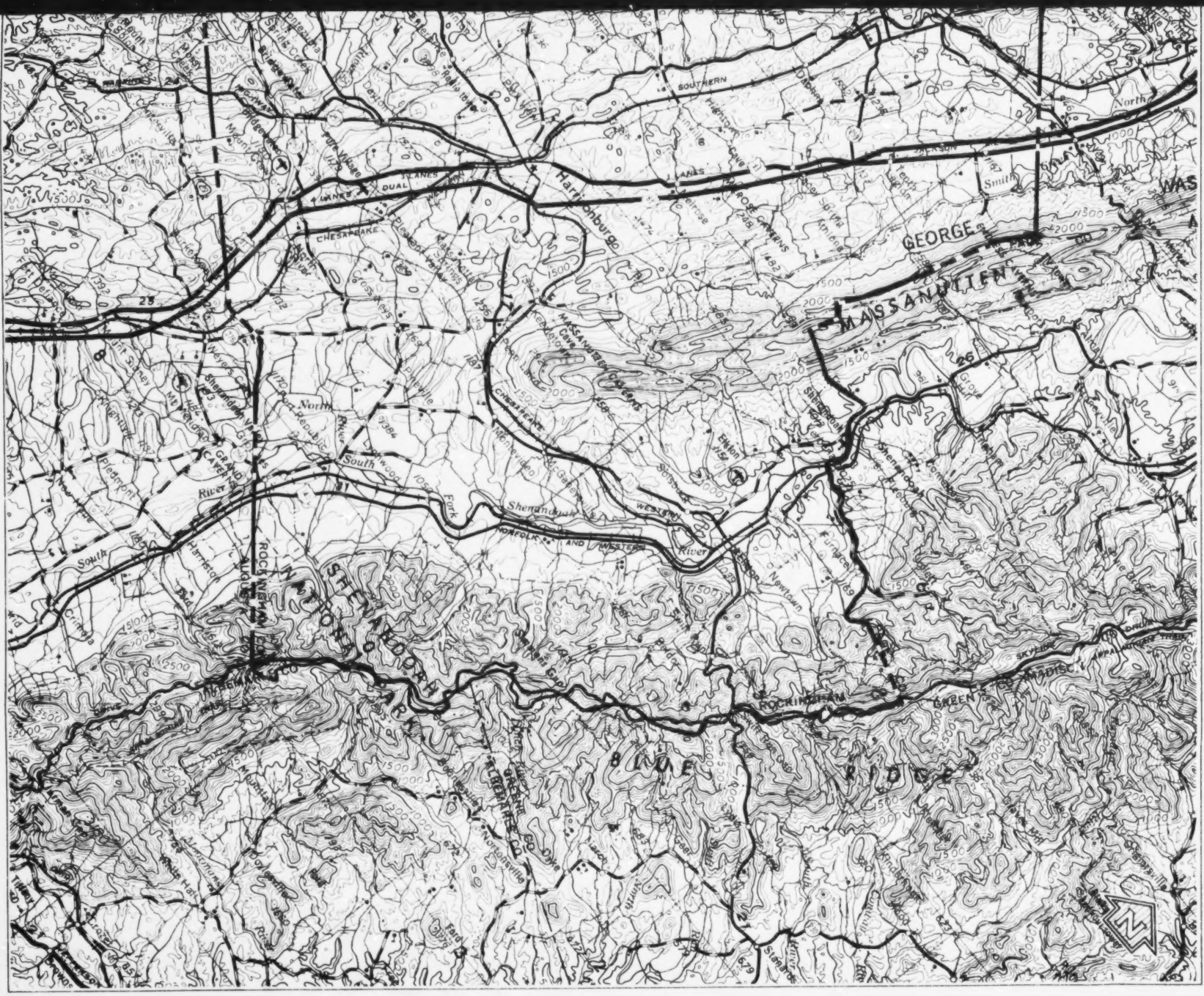
HIGHWAY
HARPINE
SOUTHERN


Harrisonburg
MASSANUTTEN
SHENANDOAH
ROCKINGHAM
BLUE RIDGE
NATIONAL FOREST
GEORGE
WASHINGTON
Shenandoah River
South Fork
North Fork
Elkton
Grottoes
Timberville
Broadway
Dayton
Bridgewater
Mount Crawford
Penn Laird
Linville
Edinburg
Woodstock
Luray
Stanley
Alma
Criders
Mauzy
Keezletown
Massanutten Caverns
Grand Caverns
Endless Caverns
Shenandoah Caverns
Natural Chimneys
Shenandoah Valley Airport
Rockingham Co. Airport
Skyline Drive
Shenandoah National Park
Chesapeake & Ohio
Norfolk and Western
Southern
Interstate 81
Interstate 64
U.S. 11
U.S. 33
U.S. 211
U.S. 340
U.S. 250
U.S. 48
U.S. 522
U.S. 50

miles upstream; Cub Run from its confluence with the South Fork Shenandoah River to approximately 1.1 miles upstream of State Route 685; Boone Run from its confluence with Quail Run to approximately 3.75 miles upstream; Quail Run from its confluence with the South Fork Shenandoah River to approximately 6.21 miles upstream; Bloomer Spring Run from its confluence with Boone Run to approximately 1.10 miles upstream; Stony Run from its confluence with the South Fork Shenandoah River to approximately 1 mile upstream of a private road crossing; the Shoemaker River from its confluence with the North Fork Shenandoah River to approximately 0.4 mile upstream of an access road; the North River from its confluence with the South Fork Shenandoah River to the upstream county boundary; Mill Creek from its confluence with the North River to approximately 0.28 mile upstream of State Route 659; Congers Creek from its confluence with Mill Creek to Lake Shenandoah; Pleasant Run from its confluence with the North River to approximately 0.61 mile upstream of State Route 709; Duck Run from its confluence with Mill Creek to approximately 0.24 mile upstream of State Route 708; Cooks Creek from the confluence of Blacks Run to a point just downstream of State Route 726; Blacks Run from its confluence with Cooks Creek to the county boundary at the Town of Bridgewater; West Fork Cooks Creek from its confluence with Cooks Creek to approximately .33 mile upstream of State Route 732; Sunset Heights Branch from its confluence with Cooks Creek to the county boundary at Bridgewater; the Dry River from its confluence with the North River to approximately 1.2 miles upstream of State Route 847; Muddy Creek from its confluence with the Dry River to approximately .41 mile upstream of State Route 772; Buttermilk Run from its confluence with War Branch to approximately 1.14 miles upstream of State Route 613; Snapp Creek from its confluence with Muddy Creek to approximately 0.95 mile upstream of State Route 752; War Branch from its confluence with Muddy Creek to approximately 1.0 mile upstream of U. S. Route 33; Linville Creek from its confluence with the North Fork Shenandoah River to approximately 0.20 mile upstream of State Route 42; West Fork from its confluence with Linville Creek to approximately 1.2 miles upstream of State Route 42; Joes Creek from its confluence with Linville Creek to State Route 910; Smith Creek for its entire length within the county; Mountain Run from its confluence with Smith Creek to approximately .56 mile upstream of State Route 620; Dry Fork from its confluence with Smith Creek to just downstream of State Route 720; the South River for its entire length within the county; Briery Branch from its confluence with the North River to approximately 2.13 miles upstream of State Route 731; and Mossy Creek from its confluence with the North River to approximately .76 mile upstream of State Route 747. In some reaches along the Dry River, out-of-bank flow spills over into a network of old channels and natural flood paths. Technical data for these reaches were not available in the SCS reports, and elevations and depths could not be determined. Therefore, these reaches have been designated as approximate flooding. The areas studied by detailed methods were selected based upon the extent and validity of available existing hydrologic and hydraulic data.

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The remaining portions of the North Fork Shenandoah River, Bennett Run, Cooks Creek, Elk Run, Capon Run, the German River, Long Run, the Dry River, Cub Run, and the North River were studied by approximate methods. Long Glade Creek, Mossy Creek, Briery Branch, Quarry Run, Skidmore Fork, Wise Hollow, Spring Creek, Beaver Creek, Union Spring Run, Beaver Creek, Union Spring Run, Hensley Hollow, Froughts Run, Silver Creek, Briery Branch, Blacks Run, War Branch, Cooks Creek, Pleasant Run, Skidmore Fork, Honey Run, and several unnamed tributaries were also studied by approximate methods. Approximate methods of analysis were used to study all remaining areas having a potential flood hazard that did not have available scientific or technical data.

2.2 Community Description

Rockingham County is located along the northwestern border of Virginia. It is bordered by Shenandoah County to the northeast, the Town of Shenandoah and Page County to the east, Greene County to the southeast, Albermarle County to the south, Augusta County to the southwest, Pendelton County, West Virginia, to the west, and Hardy County, West Virginia, to the north. The county seat is located in the City of Harrisonburg.

The watersheds in Rockingham County are located in the Northern Appalachian Ridges and Valleys physiographic province. Streams in the county are classified as mountainous zone streams, characterized by narrow flood plains, steep slopes, and rapid runoff of floodwaters.

The normal annual precipitation is 35 inches, including 25 inches of snowfall (the equivalent of 2 inches of rainfall). Average temperatures range from 33 degrees Fahrenheit (°F) in January to 74°F in July.

2.3 Principal Flood Problems

Most floods in Rockingham County occur during late fall and early spring, resulting from rapid snowmelt or intense thunderstorm activity. Year-round excess rainfall can concentrate quickly on steep slopes and cause rapidly rising flood stages on streams within the county. These floodwaters would cause damage to bridges, roads, agricultural lands, and residential and commercial facilities in the county.

The flood of record on the North Fork Shenandoah River occurred in October 1942. The stream gage registered a stage of 25.3 feet and a maximum discharge of 50,000 cubic feet per second (cfs), which is slightly greater than the 100-year flood (Reference 1).

The most damaging flood on the North River occurred in June 1949. Direct flood damage was estimated at $650,000. Analyses of stream gage records show that this flood had a recurrence interval of 75 years, with a recorded discharge of 62,000 cfs (Reference 2).

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Figures 2 and 3 show the flood of October 1942 at two locations within Rockingham County. Figures 4-21 show potential 100- and 500-year flood heights at various locations within Rockingham County.

Figure 2 - View of the October 1942 flood on the North Fork Shenandoah River looking west from State Route 259.

Figure 3 - View of the October 1942 flood on the North Fork Shenandoah River looking south at the State Route 259 crossing.

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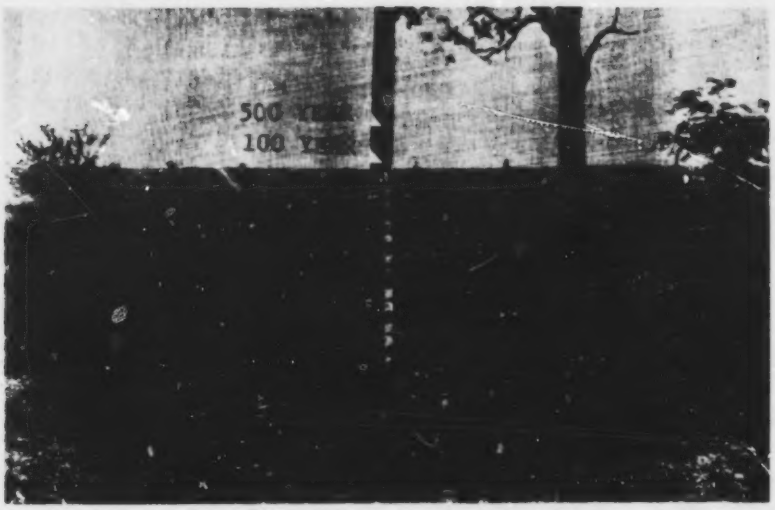

Figure 4 - Potential 100- and 500-year flood heights on Mill Creek at State Route 671, looking upstream.

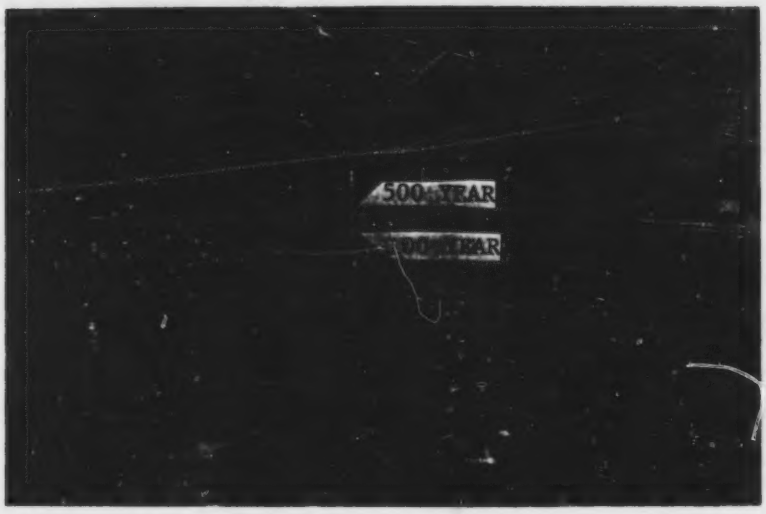

Figure 5 - Potential 100- and 500-year flood heights on Mill Creek at State Route 659, looking downstream.

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Figure 6 - Potential 100- and 500-year flood heights on Congers Creek at State Route 276, looking upstream.

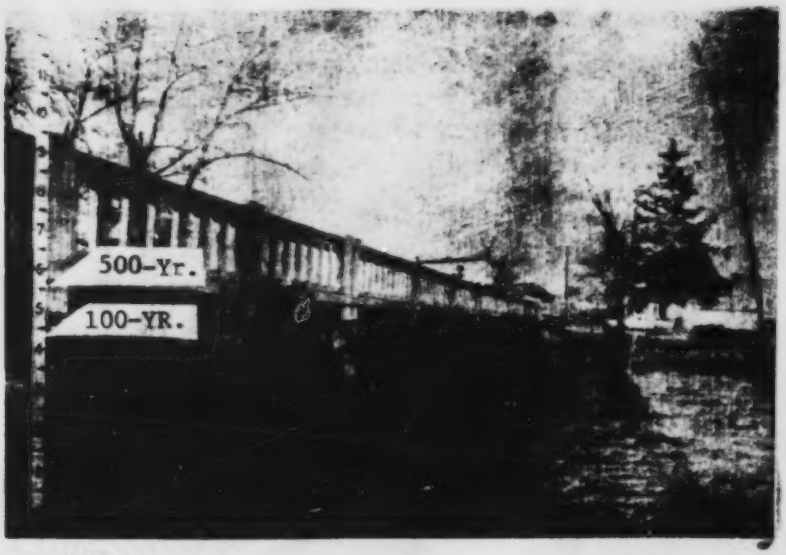

Figure 7 - Potential 100- and 500-year flood heights on Muddy Creek at the State Route 726 bridge, looking west at the upstream side.

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Figure 8 - Potential 100- and 500-year flood heights on Muddy Creek at the State Route 734 bridge, looking northeast at the downstream side.

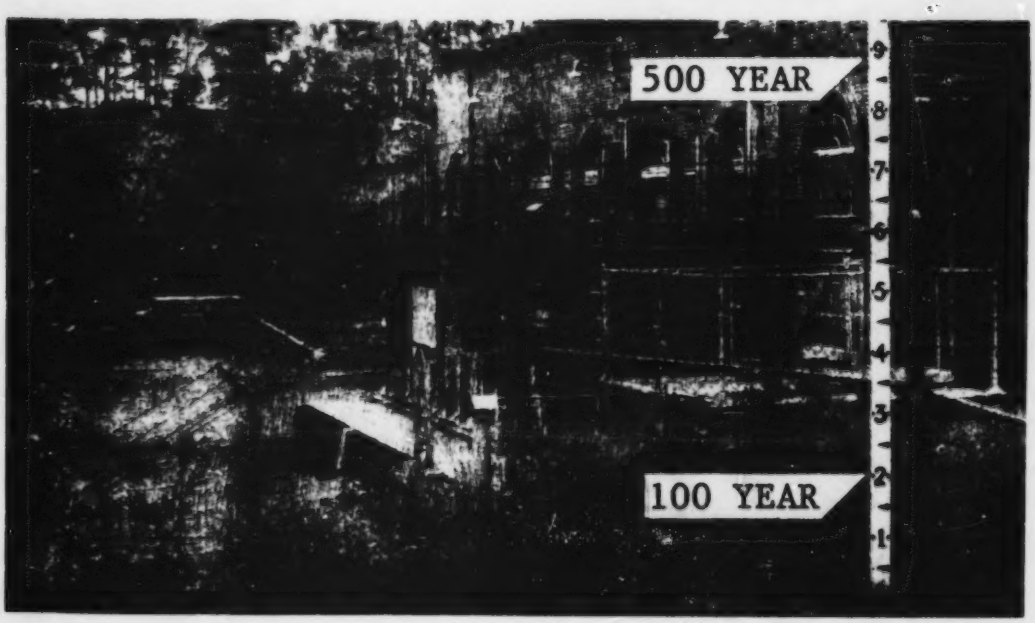

Figure 9 - Potential 100- and 500-year flood heights on the South Fork Shenandoah River at the hydro-electric plant at the downstream county boundary.

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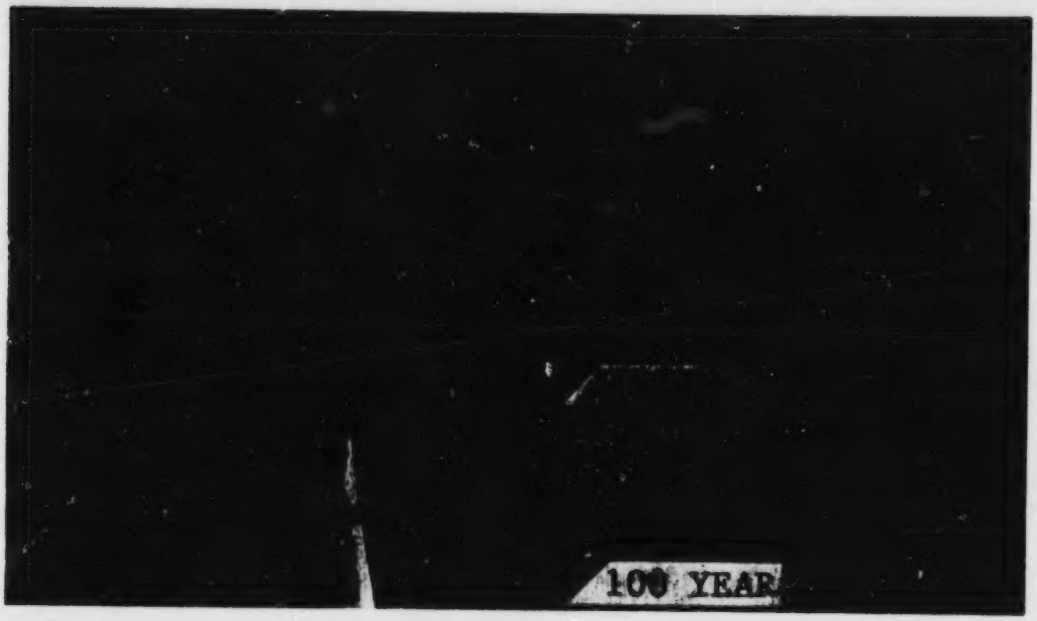

Figure 10 - Potential 100- and 500-year flood heights on the North River at the State Route 659 bridge.

Figure 11 - Potential 100- and 500-year flood heights on Linville Creek at the State Route 809 bridge, looking downstream.

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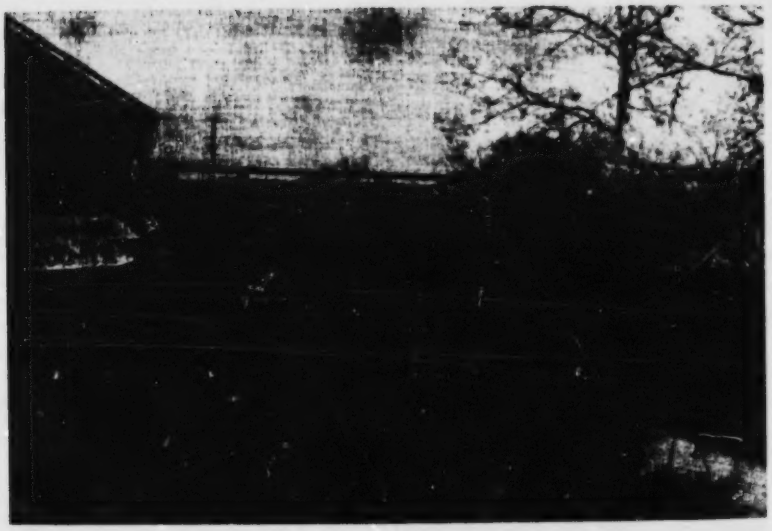

Figure 12 - Potential 100- and 500-year flood heights on Linville Creek at the State Route 721 bridge, looking downstream.

Figure 13 - Potential 100- and 500-year flood heights on Cooks Creek at U. S. Route 33, looking west.

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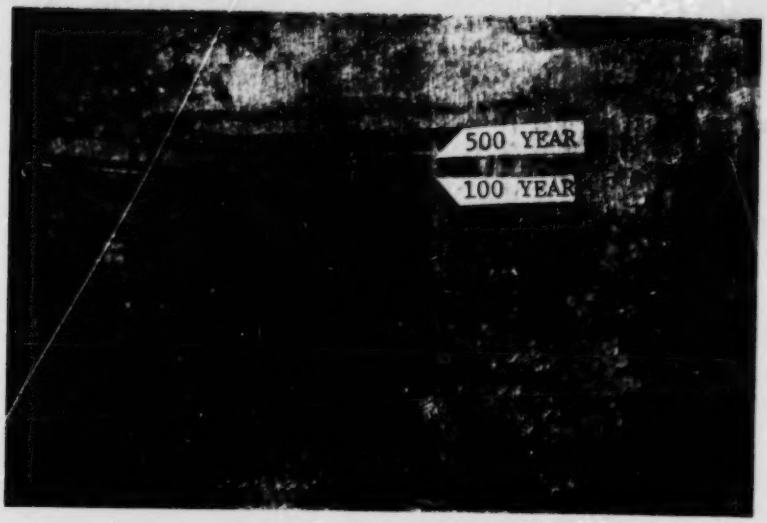

Figure 14 - Potential 100- and 500-year flood heights on Pleasant Run at State Route 257.

Figure 15 - Potential 100- and 500-year flood heights on Pleasant Run at State Route 711, looking downstream.

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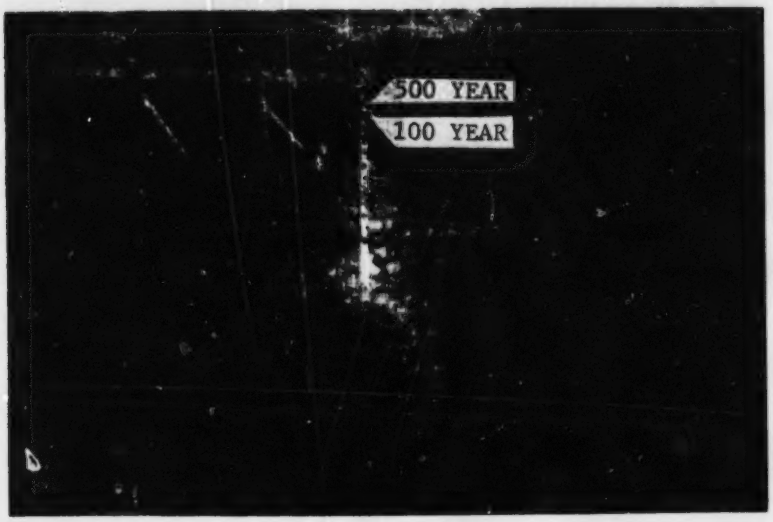

Figure 16 - Potential 100- and 500-year flood heights on Pleasant Run at State Route 704, looking downstream.

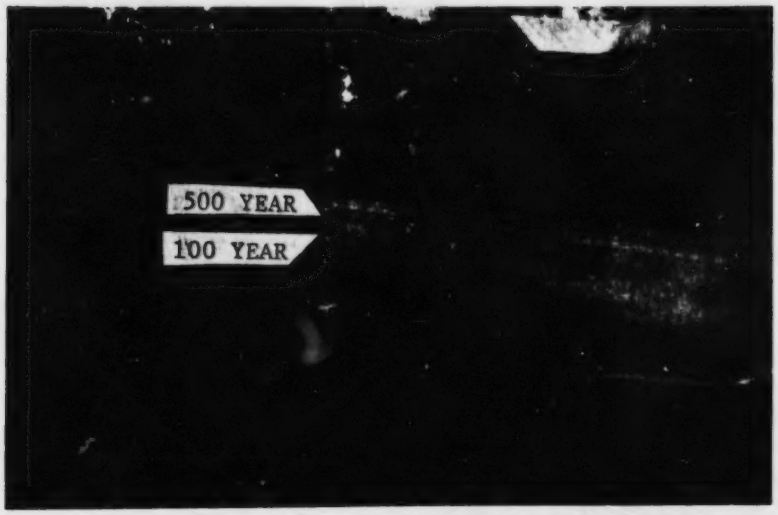

Figure 17 - Potential 100- and 500-year flood heights on Stony Run at State Route 996.

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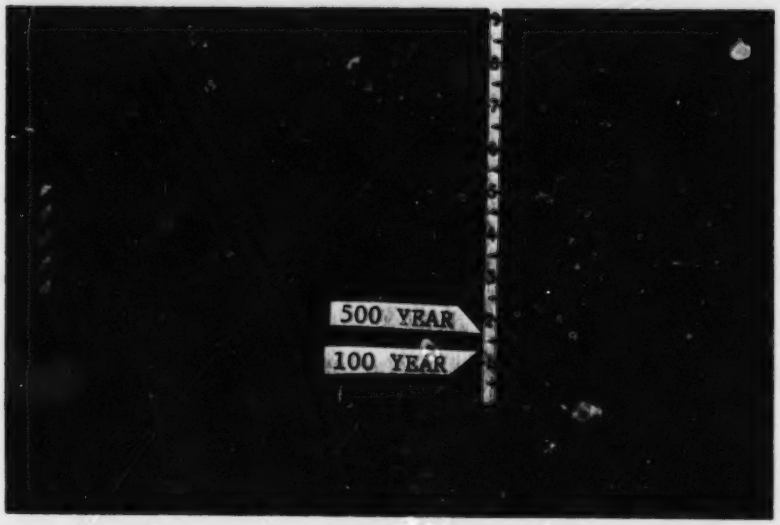

Figure 18 - Potential 100- and 500-year flood heights on Stony Run at State Route 649, looking north.

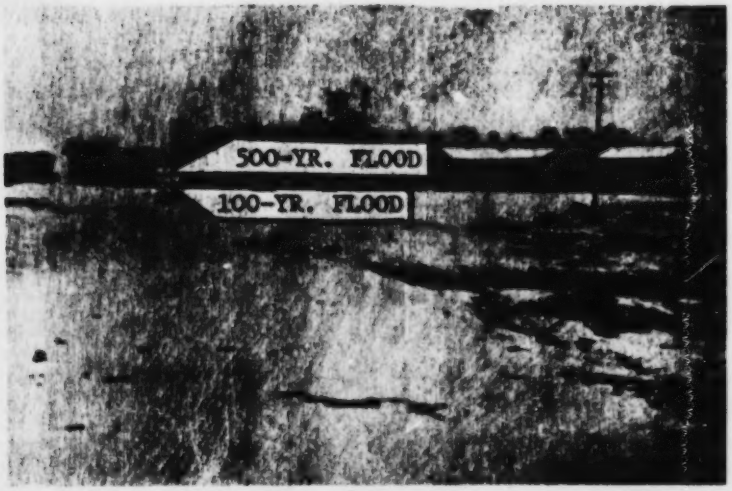

Figure 19 - Flood of 1942 on Elk Run at old U. S. Route 33, looking east. The locations of the 100- and 500-year flood heights are also shown.

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Figure 20 - Potential 100- and 500-year flood heights on Elk Run at the State Route 624 bridge.

Figure 21 - Potential 100- and 500-year flood heights on Wolf Run at State Route 623.

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2.4 Flood Protection Measures

Rockingham County has previously enacted the usual ordinances relating to zoning, subdivisions, sanitation utilities, and similar developments. An amendment to the Virginia Statewide Building Code adopted in 1977 requires restrictions on new construction and floodproofing of existing structures below the 100-year flood elevation.

The Virginia Erosion and Sediment Control Handbook was adopted in 1974 (Reference 3). The handbook includes mandatory criteria for control of runoff and sediment and for prompt revegetation of sites disturbed by earth-moving operations.

To date, three upper North River floodwater retarding structures and four lower North River structures have been completed. There are also two dams on the North River that help control high hazard flooding. Four dams upstream of Bridgewater on the Dry River have been constructed and are effective in reducing flood flows (Reference 2).

There is a levee on the Dry River just outside the county boundary, west of the Town of Bridgewater. The levee does not meet the FEMA requirement of 3 feet freeboard, but it does provide some flood control.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

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3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the community.

Peak discharge-frequency relationships of the stream gages in the vicinity were determined using a log-Pearson Type III analysis (Reference 4). These discharges were correlated with Soil Conservation Service (SCS) TR-20 routings within the watersheds and used to determine peak discharge-frequency relationships for the streams studied by detailed methods (Reference 5).

A summary of drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges." Hydrologic data for Cooks Creek, West Fork Cooks, and Sunset Heights Branch were unavailable in the SCS reports which this study is based on, therefore, these streams are not shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
NORTH FORK SHENANDOAH RIVER					
At the downstream county boundary	319.0	26,400	48,400	60,300	92,800
At the confluence of the German River	59.7	5,000	9,100	11,400	17,500
LITTLE DRY RIVER					
At its confluence with the North Fork Shenandoah River	31.1	7,200	13,100	16,400	25,200
RUNION CREEK					
At is confluence with the North Fork Shenandoah River	24.9	6,200	11,400	14,200	21,800
At the upstream county boundary	7.5	1,600	3,000	3,700	5,700
CAPON RUN					
At its confluence with the North Fork Shenandoah River	15.3	4,500	8,200	10,200	15,700

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
GERMAN RIVER					
At its confluence with the North Fork Shenandoah River	31.3	7,200	13,200	16,500	25,300
BENNETT RUN					
At its confluence with Crab Run	5.9	5,200	9,600	12,000	18,500
Upstream of State Route 824	2.4	1,300	2,300	2,900	4,400
CRAB RUN					
At its confluence with the North Fork Shenandoah River	19.2	4,900	9,000	11,300	17,300
At the upstream county boundary	5.5	2,120	3,900	4,870	7,490
OVERLY RUN					
At its confluence with Bennett Run	3.3	1,600	2,900	3,600	5,600
SOUTH FORK SHENANDOAH RIVER					
At the downstream county boundary	1,179.0	50,000	94,100	111,100	126,000
NAKED CREEK					
At its confluence with the South Fork Shenandoah River	44.8	14,860	24,030	28,090	38,810
SOUTH BRANCH NAKED CREEK					
At its confluence with Naked Creek	9.96	4,580	7,180	8,310	11,170
DRY RUN					
At its confluence with the South Fork Shenandoah River	7.7	3,160	5,230	5,320	8,370
ELK RUN					
At its confluence with the South Fork Shenandoah River	15.0	4,240	7,160	8,640	11,900

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
WEST SWIFT RUN					
At its confluence with Elk Run	2.7	900	1,600	1,940	2,700
WOLF RUN					
At its confluence with Elk Run	2.2	540	940	1,130	1,560
LEE RUN					
At its confluence with Elk Run	2.1	410	810	1,020	1,470
HAWKSBILL CREEK					
At its confluence with the South Fork Shenandoah River	15.3	6,980	11,350	13,590	18,180
EAST HAWKSBILL CREEK					
At its confluence with Hawksbill Creek	3.5	2,310	3,620	4,400	5,750
BIG RUN					
At its confluence with the South Fork Shenandoah River	14.2	2,980	4,600	5,400	7,060
MADISON RUN					
At its confluence with the South Fork Shenandoah River	7.22	2,460	4,220	5,100	7,080
ONEMILE RUN					
At its confluence with the South Fork Shenandoah River	3.84	1,240	2,060	2,520	3,420
TWOMILE RUN					
At its confluence with the South Fork Shenandoah River	3.65	1,130	1,880	2,280	3,170

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
CUB RUN					
At its confluence with the South Fork Shenandoah River	27.2	4,550	7,190	8,620	11,200
BOONE RUN					
At its confluence with Quail Run	11.7	3,200	4,850	5,810	7,420
QUAIL RUN					
At its confluence with the South Fork Shenandoah River	17.3	4,000	6,350	7,400	9,850
BLOOMER SPRING RUN					
At its confluence with Boone Run	4.3	1,450	2,150	2,600	3,300
STONY RUN					
At its confluence with the South Fork Shenandoah River	7.6	2,120	2,790	3,210	4,390
SHOEMAKER RIVER					
At its confluence with the North Fork Shenandoah River	36.1	8,800	14,800	17,800	25,900
At the confluence of Long Run	3.3	1,270	2,100	2,600	3,700
NORTH RIVER					
At the confluence of the Dry River	299.0	*	*	39,000	*
At Interstate 81	372.0	36,600	68,000	80,900	126,000
At the county boundary at Bridgewater	179.24	10,900	20,500	26,000	40,600
Downstream of the confluence of Briery Branch	158.76	9,400	17,600	22,300	34,800
Upstream of State Route 613	105.65	5,600	10,500	13,300	22,200

*Data not available

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
MILL CREEK					
At its confluence with the South Fork Shenandoah River	14.4	5,630	7,790	8,900	11,600
CONGERS CREEK					
At its confluence with Mill Creek	5.5	1,770	2,400	2,720	3,490
PLEASANT RUN					
At its confluence with the North River	8.1	3,659	5,269	6,074	8,013
DUCK RUN					
At its confluence with Mill Creek	1.6	880	1,180	1,340	1,720
BLACKS RUN					
At its confluence with Cooks Run	19.7	3,800	6,600	8,100	10,310
DRY RIVER					
At its confluence with the North River	120.0	*	*	14,720	*
MUDDY CREEK					
At its confluence with the Dry River	31.2	3,660	6,100	7,180	9,110
At State Route 763	9.8	1,630	2,940	3,520	5,000
BUTTERMILK RUN					
At its confluence with War Branch	2.2	900	1,480	1,730	2,320
SNAPP CREEK					
At its confluence with Muddy Creek	2.1	510	910	1,110	1,620
WAR BRANCH					
At its confluence with Muddy Creek	12.2	1,920	2,990	3,440	4,530

*Data not available

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TABLE 1 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
LINVILLE CREEK					
At its confluence with the North Fork Shenandoah River	48.0	9,400	17,200	21,500	33,000
At State Route 780	21.8	5,180	7,890	8,810	11,300
WEST FORK CREEK					
At its confluence with Linville Creek	7.9	2,000	3,070	3,440	4,480
JOES CREEK					
At its confluence with Linville Creek	7.4	1,250	2,060	2,350	3,170
SMITH CREEK					
At the downstream county boundary	75.0	5,100	11,500	15,500	20,700
At State Route 811	19.3	2,200	4,960	6,700	9,720
MOUNTAIN RUN					
At its confluence with Smith Creek	7.5	1,500	3,210	3,650	4,270
DRY FORK					
At its confluence with Smith Creek	19.6	2,650	4,200	4,890	5,800
SOUTH RIVER					
At its confluence with the North River	235.94	10,900	19,850	24,650	37,500
At the upstream county boundary	225.80	10,760	19,580	24,275	37,025
BRIERY BRANCH					
At its confluence with the North River	50.82	2,500	4,700	5,900	9,000
Upstream of State Route 755	32.00	1,500	2,800	3,500	5,400
MOSSY CREEK					
At its confluence with the North River	16.22	700	1,400	1,800	2,800

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3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data for the streams studied in detail were field surveyed. All bridges and culverts were surveyed to obtain elevation data and structural geometry in order to compute the significant backwater effects of those structures.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

The hydraulic analyses for the North River, the Dry River, Blacks Run, Cooks Creek, West Fork Cooks Creek, Sunset Heights Branch, and West Fork Sunset Heights Branch were obtained from the SCS National Engineering Handbook (Reference 6). A basic mathematical model of the watershed was established. Values and coefficients were assigned for physical parameters and for land-use conditions during the period that flood flows had been recorded at stream gages. These values and coefficients and a range of storm rainfalls were flood routed through the model.

Water-surface elevations of floods of the selected recurrence intervals for the remaining streams studied in detail were computed using the SCS WSP-2 computer program (Reference 7). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations for all the streams studied by detailed methods were determined by the slope/area method.

Along certain portions of the North Fork Shenandoah River, a profile base line is shown on the maps to represent channel distances as indicated on the flood profiles and floodway data tables.

Channel roughness factors (Manning's "n") used in the hydraulic computations were assigned on the basis of field inspection of the streams and flood plains. The channel "n" values for all detailed streams ranged from 0.040 to 0.070, and the overbank "n" values ranged from 0.050 to 0.119.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

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The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using aerial photographs and U. S. Geological Survey topographic maps (References 8 and 9).

For the streams studied by approximate methods, the boundary of the 100-year flood was delineated using the Flood Hazard Boundary Map for Rockingham County (Reference 10).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the

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channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

Except for the South Fork Shenandoah River, Madison Run, Onemile Run, Twomile Run, the North River from its confluence with the South Fork Shenandoah River to U. S. Route 11, Elk Run from the downstream county boundary to approximately 1.47 miles upstream, and the South River, no floodways are shown for the streams studied by detailed methods, since there were no floodways computed in the SCS reports from which information for these streams was obtained. Modified Floodway Data Tables apply to the streams that have no floodways. These tables show only cross sections, channel distances, and 100-year water-surface elevations as indicated on the profiles.

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway widths for the North River, the South River, and Elk Run extend beyond the corporate limits.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 22.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 2 for certain downstream cross sections of Stony Run, the South River, and Briery Branch are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
North Fork Shenandoah River								
A	4,195	*	*	*	959.4	959.4	*	*
B	6,800	*	*	*	965.8	965.8	*	*
C	9,800	*	*	*	970.9	970.9	*	*
D	12,130	*	*	*	976.9	976.9	*	*
E	17,610	*	*	*	988.7	988.7	*	*
F	26,130	*	*	*	1,010.1	1,010.1	*	*
G	31,200	*	*	*	1,019.9	1,019.9	*	*
H	34,440	*	*	*	1,026.8	1,026.8	*	*
I	36,690	*	*	*	1,031.6	1,031.6	*	*
J	37,500	*	*	*	1,032.8	1,032.8	*	*
K	39,555	*	*	*	1,036.3	1,036.3	*	*
L	41,895	*	*	*	1,041.0	1,041.0	*	*
M	44,375	*	*	*	1,047.1	1,047.1	*	*
N	48,755	*	*	*	1,059.0	1,059.0	*	*
O	52,255	*	*	*	1,066.9	1,066.9	*	*
P	53,095	*	*	*	1,068.8	1,068.8	*	*
Q	56,095	*	*	*	1,075.9	1,075.9	*	*
R	57,065	*	*	*	1,079.5	1,079.5	*	*
S	60,965	*	*	*	1,085.8	1,085.8	*	*
T	63,005	*	*	*	1,091.0	1,091.0	*	*
U	66,145	*	*	*	1,097.8	1,097.8	*	*

[1]Feet above county boundary
*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK SHENANDOAH RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
North Fork Shenandoah River (continued)								
V	67,705	*	*	*	1,102.0	1,102.0	*	*
W	73,400	*	*	*	1,118.8	1,118.8	*	*
X	76,400	*	*	*	1,131.2	1,131.2	*	*
Y	80,300	*	*	*	1,142.8	1,142.8	*	*
Z	80,420	*	*	*	1,147.3	1,147.3	*	*
AA	85,520	*	*	*	1,172.0	1,172.0	*	*
AB	86,060	*	*	*	1,173.6	1,173.6	*	*
AC	90,210	*	*	*	1,189.7	1,189.7	*	*
AD	90,330	*	*	*	1,190.7	1,190.7	*	*
AE	91,410	*	*	*	1,192.7	1,192.7	*	*
AF	94,110	*	*	*	1,202.7	1,202.7	*	*
AG	94,230	*	*	*	1,203.5	1,203.5	*	*
AH	98,100	*	*	*	1,222.1	1,222.1	*	*
AI	104,610	*	*	*	1,252.4	1,252.4	*	*
AJ	107,160	*	*	*	1,261.4	1,261.4	*	*
AK	107,280	*	*	*	1,263.6	1,263.6	*	*
AL	110,910	*	*	*	1,281.3	1,281.3	*	*
AM	116,220	*	*	*	1,307.8	1,307.8	*	*
AN	120,020	*	*	*	1,325.5	1,325.5	*	*
AO	121,420	*	*	*	1,331.6	1,331.6	*	*

[1]Feet above county boundary
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH FORK SHENANDOAH RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
North Fork Shenandoah River (continued)								
AP	125,920[1]	*	*	*	1,358.6	1,358.6	*	*
AQ	131,140[1]	*	*	*	1,393.5	1,393.5	*	*
AR	131,260[1]	*	*	*	1,396.0	1,396.0	*	*
Little Dry River								
A	1,135[2]	*	*	*	1,178.2	1,178.2	*	*
B	6,145[2]	*	*	*	1,209.8	1,209.8	*	*
C	8,990[2]	*	*	*	1,237.0	1,237.0	*	*
D	14,560[2]	*	*	*	1,294.8	1,294.8	*	*
E	19,030[2]	*	*	*	1,325.2	1,325.2	*	*
F	24,000[2]	*	*	*	1,396.5	1,396.5	*	*
G	24,390[2]	*	*	*	1,401.0	1,401.0	*	*
H	26,465[2]	*	*	*	1,435.8	1,435.8	*	*
I	28,600[2]	*	*	*	1,471.4	1,471.4	*	*
J	32,845[2]	*	*	*	1,543.7	1,543.7	*	*
K	35,330[2]	*	*	*	1,602.6	1,602.6	*	*
L	38,210[2]	*	*	*	1,665.5	1,665.5	*	*
M	40,660[2]	*	*	*	1,711.7	1,711.7	*	*
N	42,620[2]	*	*	*	1,771.9	1,771.9	*	*

[1]Feet above county boundary
[2]Feet above confluence with North Fork Shenandoah River
*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

28 **NORTH FORK SHENANDOAH RIVER - LITTLE DRY RIVER**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Little Dry River (continued)								
O	44,955	*	*	*	1,839.5	1,839.5	*	*
P	46,670	*	*	*	1,874.9	1,874.9	*	*
Runion Creek								
A	810	*	*	*	1,092.2	1,092.2	*	*
B	930	*	*	*	1,092.9	1,092.9	*	*
C	2,480	*	*	*	1,096.3	1,096.3	*	*
D	5,690	*	*	*	1,110.1	1,110.1	*	*
E	5,810	*	*	*	1,111.3	1,111.3	*	*
F	8,990	*	*	*	1,126.3	1,126.3	*	*
G	11,930	*	*	*	1,141.6	1,141.6	*	*
H	12,050	*	*	*	1,142.9	1,142.9	*	*
I	13,490	*	*	*	1,150.6	1,150.6	*	*
J	14,220	*	*	*	1,154.7	1,154.7	*	*
K	18,270	*	*	*	1,185.1	1,185.1	*	*
L	20,190	*	*	*	1,199.2	1,199.2	*	*
M	20,310	*	*	*	1,201.1	1,201.1	*	*
N	24,810	*	*	*	1,223.4	1,223.4	*	*
O	27,740	*	*	*	1,257.9	1,257.9	*	*
P	29,640	*	*	*	1,275.8	1,275.8	*	*
Q	33,570	*	*	*	1,308.2	1,308.2	*	*
R	36,990	*	*	*	1,338.6	1,338.6	*	*

[1]Feet above confluence with North Fork Shenandoah River

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

LITTLE DRY RIVER - RUNION CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Runion Creek (continued)								
S	40,935	*	*	*	1,376.5	1,376.5	*	*
T	43,935	*	*	*	1,406.6	1,406.6	*	*
Capon Run								
A	3,150	*	*	*	1,357.4	1,357.4	*	*
B	3,375	*	*	*	1,361.6	1,361.6	*	*
C	7,455	*	*	*	1,415.1	1,415.1	*	*
D	12,255	*	*	*	1,467.5	1,467.5	*	*
E	12,405	*	*	*	1,469.1	1,469.1	*	*
F	15,985	*	*	*	1,504.5	1,504.5	*	*
German River								
A	30	*	*	*	1,413.6	1,413.6	*	*
B	210	*	*	*	1,416.5	1,416.5	*	*
C	4,850	*	*	*	1,450.9	1,450.9	*	*
D	6,990	*	*	*	1,465.7	1,465.7	*	*
E	7,165	*	*	*	1,467.0	1,467.0	*	*
F	7,980	*	*	*	1,475.7	1,475.7	*	*
G	9,170	*	*	*	1,487.1	1,487.1	*	*
H	11,860	*	*	*	1,512.4	1,512.4	*	*
I	11,975	*	*	*	1,514.2	1,514.2	*	*
J	12,910	*	*	*	1,519.8	1,519.8	*	*
K	17,325	*	*	*	1,565.2	1,565.2	*	*

[1]Feet above confluence with North Fork Shenandoah River
*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

RUNION CREEK - CAPON RUN - GERMAN RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
German River (continued)								
L	19,555[1]	*	*	*	1,588.5	1,588.5	*	*
M	20,775[1]	*	*	*	1,603.4	1,603.4	*	*
N	20,920[1]	*	*	*	1,605.1	1,605.1	*	*
O	22,835[1]	*	*	*	1,626.4	1,626.4	*	*
P	26,095[1]	*	*	*	1,659.5	1,659.5	*	*
Q	29,545[1]	*	*	*	1,699.1	1,699.1	*	*
R	35,095[1]	*	*	*	1,762.8	1,762.8	*	*
Bennett Run								
A	120[2]	*	*	*	1,432.8	1,432.8	*	*
B	240[2]	*	*	*	1,434.1	1,434.1	*	*
C	2,470[2]	*	*	*	1,455.8	1,455.8	*	*
D	6,110[2]	*	*	*	1,505.0	1,505.0	*	*
E	8,220[2]	*	*	*	1,520.2	1,520.2	*	*
F	9,890[2]	*	*	*	1,554.9	1,554.9	*	*
G	10,010[2]	*	*	*	1,557.0	1,557.0	*	*
H	10,660[2]	*	*	*	1,568.7	1,568.7	*	*
I	10,780[2]	*	*	*	1,570.3	1,570.3	*	*
J	13,230[2]	*	*	*	1,616.2	1,616.2	*	*
K	16,200[2]	*	*	*	1,678.7	1,678.7	*	*
L	16,320[2]	*	*	*	1,682.3	1,682.3	*	*
M	19,360[2]	*	*	*	1,772.6	1,772.6	*	*

[1]Feet above confluence with North Fork Shenandoah River

[2]Feet above confluence with Crab Run

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

GERMAN RIVER - BENNETT RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Crab Run								
A	6,200[1]	*	*	*	1,449.9	1,449.9	*	*
B	8,750[1]	*	*	*	1,483.2	1,483.2	*	*
C	12,125[1]	*	*	*	1,515.8	1,515.8	*	*
D	13,625[1]	*	*	*	1,524.0	1,524.0	*	*
E	19,755[1]	*	*	*	1,582.0	1,582.0	*	*
Overly Run								
A	240[2]	*	*	*	1,517.6	1,517.6	*	*
B	3,720[2]	*	*	*	1,578.6	1,578.6	*	*
C	3,840[2]	*	*	*	1,580.8	1,580.8	*	*
D	7,230[2]	*	*	*	1,651.2	1,651.2	*	*

[1]Feet above confluence with North Fork Shenandoah River
[2]Feet above confluence with Bennett Run
*Data not available

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
South Fork Shenandoah River								
A	0	1399/955[2]	11,250	9.9	901.1	901.1	901.1	0.0
B	2,610	629/85[2]	12,750	8.7	908.1	908.1	908.1	0.0
C	5,445	571/135[2]	17,800	6.2	912.8	912.8	913.8	1.0
D	7,761	608/325[2]	12,800	8.6	916.9	916.9	916.9	0.0
E	11,202	763/215[2]	16,900	6.6	920.9	920.9	920.9	0.0
F	15,567	417	10,500	10.3	926.0	926.0	926.0	0.0
G	20,112	624	12,650	8.4	930.3	930.3	930.3	0.0
H	24,452	863	15,900	6.6	936.1	936.1	936.1	0.0
I	27,362	1,130	19,500	5.4	939.0	939.0	940.0	1.0
J	31,592	2,170	31,400	3.4	941.5	941.5	942.5	1.0
K	37,999	2,400	17,900	5.8	947.0	947.0	948.0	1.0
L	41,218	1,680	15,000	5.9	951.2	951.2	952.2	1.0
M	42,613	1808/750[2]	33,240	3.1	953.8	953.8	953.8	0.0
N	44,401	1451/1190[2]	16,050	6.5	955.5	955.5	955.5	0.0
O	45,706	1900/1660[2]	16,400	6.3	958.2	958.2	959.2	1.0
P	52,141	1,500	19,250	5.4	965.2	965.2	966.2	1.0
Q	57,511	977	14,450	7.1	973.0	973.0	973.0	0.0
R	58,966	769	13,600	7.6	975.0	975.0	976.0	1.0
S	62,536	1,006	16,700	6.2	979.0	979.0	980.0	1.0
T	73,141	2,032	14,200	7.2	990.3	990.3	990.3	0.0
U	75,841	950	15,250	6.7	994.9	994.9	995.9	1.0

[1]Feet above county boundary
[2]Width/width within county boundary

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

SOUTH FORK SHENANDOAH RIVER

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
South Fork Shenandoah River (continued)								
V	78,721[1]	1,155	22,400	4.6	1,000.1	1,000.1	1,000.1	0.0
W	83,170[1]	879	17,400	5.8	1,007.0	1,007.0	1,008.0	1.0
X	88,240[1]	1,012	18,900	5.4	1,013.6	1,013.6	1,014.6	1.0
Y	95,575[1]	847	12,200	8.2	1,028.8	1,028.8	1,028.8	0.0
Z	99,190[1]	1,006	20,500	4.9	1,032.2	1,032.2	1,033.2	1.0
AA	105,505[1]	2,396	23,250	4.3	1,037.1	1,037.1	1,038.1	1.0
AB	111,445[1]	820	13,900	7.2	1,043.3	1,043.3	1,043.3	0.0
AC	117,601[1]	2,092	37,600	2.6	1,048.6	1,048.6	1,049.6	1.0
AD	121,465[1]	1,553	23,750	4.1	1,051.4	1,051.4	1,052.4	1.0
AE	127,630[1]	779	14,600	6.6	1,058.0	1,058.0	1,059.0	1.0
Naked Creek								
A	1,440[2]	*	*	*	923.3	918.0[3]	*	*
B	1,625[2]	*	*	*	923.3	921.9[3]	*	*
C	4,175[2]	*	*	*	937.9	937.9	*	*
D	5,135[2]	*	*	*	943.0	943.0	*	*
E	5,520[2]	*	*	*	947.7	947.7	*	*
F	7,295[2]	*	*	*	960.5	960.5	*	*
G	9,480[2]	*	*	*	976.0	976.0	*	*

[1]Feet above county boundary

[2]Feet above confluence with South Fork Shenandoah River

[3]Elevation computed without consideration of backwater from South Fork Shenandoah River

*Data not available

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

SOUTH FORK SHENANDOAH RIVER - NAKED CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Naked Creek (continued)								
H	12,975[1]	*	*	*	1,004.7	1,004.7	*	*
I	14,925[1]	*	*	*	1,019.7	1,019.7	*	*
J	16,715[1]	*	*	*	1,037.7	1,037.7	*	*
K	16,980[1]	*	*	*	1,038.7	1,038.7	*	*
L	19,040[1]	*	*	*	1,058.7	1,058.7	*	*
South Branch Naked Creek								
A	300[2]	*	*	*	1,076.0	1,076.0	*	*
B	410[2]	*	*	*	1,078.0	1,078.0	*	*
C	1,455[2]	*	*	*	1,091.0	1,091.0	*	*
D	5,230[2]	*	*	*	1,143.0	1,143.0	*	*
E	6,520[2]	*	*	*	1,163.0	1,163.0	*	*
Dry Run								
A	2,820[3]	*	*	*	949.4	949.4	*	*
B	3,100[3]	*	*	*	953.8	953.8	*	*
C	6,245[3]	*	*	*	977.6	977.6	*	*
D	8,200[3]	*	*	*	1,008.5	1,008.5	*	*
E	9,840[3]	*	*	*	1,040.4	1,040.4	*	*
F	11,740[3]	*	*	*	1,074.1	1,074.1	*	*

[1]Feet above confluence with South Fork Shenandoah River

[2]Feet above confluence with Naked Creek

[3]Feet above confluence with Elk Run

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

NAKED CREEK - SOUTH BRANCH NAKED CREEK - DRY RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Dry Run (continued)								
G	13,950[1]	*	*	*	1,106.5	1,106.5	*	*
H	15,250[1]	*	*	*	1,132.0	1,132.0	*	*
I	17,650[1]	*	*	*	1,176.0	1,176.0	*	*
J	17,815[1]	*	*	*	1,178.7	1,178.7	*	*
K	18,830[1]	*	*	*	1,202.3	1,202.3	*	*
L	20,330[1]	*	*	*	1,232.3	1,232.3	*	*
M	22,070[1]	*	*	*	1,271.0	1,271.0	*	*
N	23,170[1]	*	*	*	1,291.1	1,291.1	*	*
O	24,880[1]	*	*	*	1,335.7	1,335.7	*	*
P	26,280[1]	*	*	*	1,362.6	1,362.6	*	*
Q	27,055[1]	*	*	*	1,378.0	1,378.0	*	*
R	28,010[1]	*	*	*	1,401.3	1,401.3	*	*
S	29,520[1]	*	*	*	1,442.9	1,442.9	*	*
Elk Run								
A	5,610[2]	688[3]	2,836	3.1	980.9	980.9	981.9	1.0
B	6,610[2]	800[3]	1,940	4.5	990.5	990.5	991.5	1.0
C	8,405[2]	*	*	*	1,004.1	1,004.1	*	*
D	9,305[2]	*	*	*	1,013.6	1,013.6	*	*
E	11,975[2]	*	*	*	1,040.5	1,040.5	*	*
F	13,255[2]	*	*	*	1,055.2	1,055.2	*	*

[1]Feet above confluence with Elk Run

[2]Feet above confluence with South Fork Shenandoah River

[3]This width extends beyond county boundary

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

36

DRY RUN - ELK RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Elk Run (continued)								
G	14,330[1]	*	*	*	1,068.7	1,068.7	*	*
H	16,265[1]	*	*	*	1,093.4	1,093.4	*	*
I	18,000[1]	*	*	*	1,120.8	1,120.8	*	*
J	19,620[1]	*	*	*	1,145.1	1,145.1	*	*
K	20,398[1]	*	*	*	1,168.1	1,168.1	*	*
L	20,660[1]	*	*	*	1,171.6	1,171.6	*	*
M	23,335[1]	*	*	*	1,238.2	1,238.2	*	*
N	25,060	*	*	*	1,297.5	1,297.5	*	*
O	26,600	*	*	*	1,356.2	1,356.2	*	*
West Swift Run								
A	865[2]	*	*	*	1,081.0	1,081.0	*	*
B	2,605[2]	*	*	*	1,114.9	1,114.9	*	*
C	4,310[2]	*	*	*	1,148.6	1,148.6	*	*
D	5,885[2]	*	*	*	1,185.2	1,185.2	*	*
E	7,625[2]	*	*	*	1,218.4	1,218.4	*	*
F	9,125[2]	*	*	*	1,233.6	1,233.6	*	*
G	9,285[2]	*	*	*	1,237.8	1,237.8	*	*
H	9,470[2]	*	*	*	1,238.7	1,238.7	*	*
I	10,825[2]	*	*	*	1,262.5	1,262.5	*	*
J	12,805[2]	*	*	*	1,320.1	1,320.1	*	*
K	14,520[2]	*	*	*	1,379.8	1,379.8	*	*

[1]Feet above confluence with South Fork Shenandoah River

[2]Feet above confluence with Elk Run

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

ELK RUN - WEST SWIFT RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Wolf Run								
A	660[1]	*	*	*	1,108.9	1,108.9	*	*
B	1,350[1]	*	*	*	1,121.4	1,121.4	*	*
C	1,590[1]	*	*	*	1,124.7	1,124.7	*	*
D	2,220[1]	*	*	*	1,140.3	1,140.3	*	*
Lee Run								
A	420[1]	*	*	*	1,153.6	1,153.6	*	*
B	2,220[1]	*	*	*	1,202.1	1,202.1	*	*
Hawksbill Creek								
A	1,200[2]	*	*	*	968.9	968.9	*	*
B	1,475[2]	*	*	*	972.7	972.7	*	*
C	3,270[2]	*	*	*	984.9	984.9	*	*
D	5,015[2]	*	*	*	1,010.0	1,010.0	*	*
E	8,915[2]	*	*	*	1,053.7	1,053.7	*	*
F	12,530[2]	*	*	*	1,096.0	1,096.0	*	*
G	16,665[2]	*	*	*	1,149.0	1,149.0	*	*
H	18,315[2]	*	*	*	1,173.4	1,173.4	*	*
I	19,990[2]	*	*	*	1,198.7	1,198.7	*	*
J	21,545[2]	*	*	*	1,214.0	1,214.0	*	*
K	23,405[2]	*	*	*	1,247.0	1,247.0	*	*
L	23,555[2]	*	*	*	1,248.8	1,248.8	*	*

[1]Feet above confluence with Elk Run
[2]Feet above confluence with South Fork Shenandoah River
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

WOLF RUN - LEE RUN - HAWKSBILL CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Hawksbill Creek (continued)								
M	24,790[1]	*	*	*	1,260.0	1,260.0	*	*
N	26,675[1]	*	*	*	1,301.2	1,301.2	*	*
O	28,590[1]	*	*	*	1,334.0	1,334.0	*	*
P	30,150[1]	*	*	*	1,367.9	1,367.9	*	*
Q	31,620[1]	*	*	*	1,396.2	1,396.2	*	*
R	33,840[1]	*	*	*	1,445.0	1,445.0	*	*
East Hawksbill Creek								
A	2,190[2]	*	*	*	1,208.7	1,208.7	*	*
B	2,350[2]	*	*	*	1,212.8	1,212.8	*	*
C	3,880[2]	*	*	*	1,265.0	1,265.0	*	*
D	5,350[2]	*	*	*	1,301.5	1,301.5	*	*
E	6,818[2]	*	*	*	1,344.7	1,344.7	*	*
F	7,988[2]	*	*	*	1,387.1	1,387.1	*	*
G	8,830[2]	*	*	*	1,414.9	1,414.9	*	*
H	9,955[2]	*	*	*	1,456.6	1,456.6	*	*

[1]Feet above confluence with South Fork Shenandoah River
[2]Feet above confluence with Hawksbill Creek
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

HAWKSBILL CREEK - EAST HAWKSBILL CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Big Run								
A	2,260	*	*	*	1,022.4	1,022.4	*	*
B	2,490	*	*	*	1,026.2	1,026.2	*	*
C	3,315	*	*	*	1,034.1	1,034.1	*	*
D	4,570	*	*	*	1,055.6	1,055.6	*	*
E	5,930	*	*	*	1,073.9	1,073.9	*	*
F	7,270	*	*	*	1,089.4	1,089.4	*	*
Madison Run								
A	5,420	166	800	6.0	1,116.0	1,116.0	1,117.0	1.0
B	8,985	148	700	6.5	1,164.0	1,164.0	1,165.0	1.0
C	11,695	462	857	5.0	1,205.0	1,205.0	1,205.0	0.0
D	13,520	359	841	4.8	1,229.0	1,229.0	1,229.0	0.0
E	16,415	180	643	6.2	1,272.2	1,272.2	1,272.2	0.0
Onemile Run								
A	1,280	76	400	6.4	1,013.8	1,013.8	1,014.8	1.0
B	1,855	126	400	6.4	1,025.0	1,025.0	1,025.0	0.0
C	5,995	211	400	4.7	1,114.5	1,114.5	1,114.5	0.0
Twomile Run								
A	2,115	163	1,000	2.3	1,022.0	1,022.0	1,023.0	1.0
B	5,330	460	700	2.8	1,082.5	1,082.5	1,083.5	1.0
C	10,095	57	200	6.5	1,192.0	1,192.0	1,192.0	0.0

[1]Feet above confluence with South Fork Shenandoah River
*Data not available

BEST COPY AVAILABLE

TABLE2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG RUN - MADISON RUN - ONEMILE RUN - TWOMILE RUN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Cub Run								
A	2,630	*	*	*	1,021.3	1,021.3	*	*
B	4,205	*	*	*	1,027.6	1,027.6	*	*
C	4,565	*	*	*	1,029.7	1,029.7	*	*
D	7,015	*	*	*	1,036.4	1,036.4	*	*
E	9,685	*	*	*	1,041.0	1,041.0	*	*
F	11,815	*	*	*	1,048.0	1,048.0	*	*
G	13,945	*	*	*	1,057.7	1,057.7	*	*
H	14,065	*	*	*	1,059.5	1,059.5	*	*
I	15,975	*	*	*	1,065.5	1,065.5	*	*
J	18,045	*	*	*	1,078.0	1,078.0	*	*
K	20,115	*	*	*	1,088.4	1,088.4	*	*
L	21,790	*	*	*	1,098.0	1,098.0	*	*
M	21,940	*	*	*	1,100.3	1,100.3	*	*
N	23,565	*	*	*	1,107.6	1,107.6	*	*
O	25,410	*	*	*	1,117.3	1,117.3	*	*
P	27,780	*	*	*	1,127.6	1,127.6	*	*
Q	29,380	*	*	*	1,138.7	1,138.7	*	*
R	32,065	*	*	*	1,153.9	1,153.9	*	*
S	32,195	*	*	*	1,156.9	1,156.9	*	*
T	32,490	*	*	*	1,159.4	1,159.4	*	*
U	33,970	*	*	*	1,168.3	1,168.3	*	*
V	34,230	*	*	*	1,173.4	1,173.4	*	*
W	35.205	*	*	*	1,180.3	1,180.3	*	*

[1]Feet above confluence with South Fork Shenandoah River

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

CUB RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Cub Run (continued)								
X	36,560[1]	*	*	*	1,184.2	1,184.2	*	*
Y	38,930[1]	*	*	*	1,195.5	1,195.5	*	*
Z	39,105[1]	*	*	*	1,198.6	1,198.6	*	*
AA	39,230[1]	*	*	*	1,201.5	1,201.5	*	*
AB	39,450[1]	*	*	*	1,202.8	1,202.8	*	*
AC	41,700[1]	*	*	*	1,216.5	1,216.5	*	*
AD	45,180[1]	*	*	*	1,249.0	1,249.0	*	*
AE	47,330[1]	*	*	*	1,269.3	1,269.3	*	*
AF	48,605[1]	*	*	*	1,281.2	1,281.2	*	*
AG	49,500[1]	*	*	*	1,292.4	1,292.4	*	*
AH	49,580[1]	*	*	*	1,293.4	1,293.4	*	*
AI	51,870[1]	*	*	*	1,319.5	1,319.5	*	*
AJ	51,990[1]	*	*	*	1,322.0	1,322.0	*	*
AK	54,030[1]	*	*	*	1,347.8	1,347.8	*	*
AL	56,225[1]	*	*	*	1,381.1	1,381.1	*	*
AM	57,790[1]	*	*	*	1,404.6	1,404.6	*	*
Boone Run								
A	1,680[2]	*	*	*	956.1	956.1	*	*
B	1,890[2]	*	*	*	957.6	957.6	*	*
C	3,285[2]	*	*	*	966.0	966.0	*	*

[1]Feet above confluence with South Fork Shenandoah River

[2]Feet above confluence with Quail Run

*Data not available

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

CUB RUN - BOONE RUN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Boone Run (continued)								
D	5,315[1]	*	*	*	977.9	977.9	*	*
E	7,190[1]	*	*	*	988.6	988.6	*	*
F	7,350[1]	*	*	*	991.7	991.7	*	*
G	9,665[1]	*	*	*	1,010.5	1,010.5	*	*
H	12,035[1]	*	*	*	1,054.7	1,054.7	*	*
I	14,070[1]	*	*	*	1,100.0	1,100.0	*	*
J	16,170[1]	*	*	*	1,159.5	1,159.5	*	*
K	17,285[1]	*	*	*	1,184.5	1,184.5	*	*
L	18,420[1]	*	*	*	1,220.1	1,220.1	*	*
M	19,680[1]	*	*	*	1,265.8	1,265.8	*	*
Quail Run								
A	5,875[2]	*	*	*	947.5	947.5	*	*
B	8,215[2]	*	*	*	958.6	958.6	*	*
C	8,375[2]	*	*	*	959.7	959.7	*	*
D	12,925[2]	*	*	*	980.2	980.2	*	*
E	13,105[2]	*	*	*	981.7	981.7	*	*
F	15,385[2]	*	*	*	991.7	991.7	*	*
G	16,555[2]	*	*	*	997.8	997.8	*	*
H	17,995[2]	*	*	*	1,008.6	1,008.6	*	*
I	19,915[2]	*	*	*	1,021.4	1,021.4	*	*

[1]Feet above confluence with Quail Run

[2]Feet above confluence with South Fork Shenandoah River

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

BOONE RUN - QUAIL RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Quail Run (continued)								
J	22,390[1]	*	*	*	1,038.7	1,038.7	*	*
K	22,555[1]	*	*	*	1,041.8	1,041.8	*	*
L	26,245[1]	*	*	*	1,062.2	1,062.2	*	*
M	27,875[1]	*	*	*	1,083.2	1,083.2	*	*
N	29,365[1]	*	*	*	1,101.0	1,101.0	*	*
O	31,645[1]	*	*	*	1,136.9	1,136.9	*	*
P	32,840[1]	*	*	*	1,156.0	1,156.0	*	*
Bloomer Spring Run								
A	75[2]	*	*	*	988.6	987.6[3]	*	*
B	305[2]	*	*	*	992.0	992.0	*	*
C	1,325[2]	*	*	*	995.2	995.2	*	*
D	3,475[2]	*	*	*	1,005.4	1,005.4	*	*
E	4,475[2]	*	*	*	1,010.2	1,010.2	*	*
F	6,300[2]	*	*	*	1,022.5	1,022.5	*	*
Stony Run								
A	1,560[1]	*	*	*	1,007.1	1,003.5[4]	*	*
B	3,570[1]	*	*	*	1,022.6	1,022.6	*	*
C	5,010[1]	*	*	*	1,031.3	1,031.3	*	*

[1]Feet above confluence with South Fork Shenandoah River
[2]Feet above confluence with Boone Run
*Data not available
[3]Elevation computed without consideration of backwater from Boone Run
[4]Elevation computed without consideration of backwater from South Fork Shenandoah River

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Stony Run (continued)								
D	6,395	*	*	*	1,035.3	1,035.3	*	*
E	8,840	*	*	*	1,047.7	1,047.7	*	*
F	8,945	*	*	*	1,049.8	1,049.8	*	*
G	10,980	*	*	*	1,067.5	1,067.5	*	*
H	12,695	*	*	*	1,085.4	1,085.4	*	*
I	12,910	*	*	*	1,086.6	1,086.6	*	*
J	13,670	*	*	*	1,098.5	1,098.5	*	*
K	14,930	*	*	*	1,126.0	1,126.0	*	*
L	15,230	*	*	*	1,129.1	1,129.1	*	*
M	16,075	*	*	*	1,145.3	1,145.3	*	*
N	16,270	*	*	*	1,152.8	1,152.8	*	*
O	16,425	*	*	*	1,153.7	1,153.7	*	*
P	16,850	*	*	*	1,162.4	1,162.4	*	*
Q	17,535	*	*	*	1,177.3	1,177.3	*	*
R	17,780	*	*	*	1,178.5	1,178.5	*	*
S	18,010	*	*	*	1,186.7	1,186.7	*	*
T	18,175	*	*	*	1,189.9	1,189.9	*	*
U	18,335	*	*	*	1,194.2	1,194.2	*	*
V	18,650	*	*	*	1,198.5	1,198.5	*	*
W	18,785	*	*	*	1,204.7	1,204.7	*	*
X	19,040	*	*	*	1,209.2	1,209.2	*	*
Y	20,780	*	*	*	1,248.8	1,248.8	*	*
Z	22,425	*	*	*	1,295.3	1,295.3	*	*

[1]Feet above confluence with South Fork Shenandoah River

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

STONY RUN

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
North River								
A	1,310	476	8,850	9.1	1,063.5	1,063.5	1,063.5	0.0
B	3,790	588	9,500	8.5	1,068.2	1,068.2	1,068.2	0.0
C	8,505	556	10,200	7.8	1,074.9	1,074.9	1,074.9	0.0
D	10,575	675	12,000	6.6	1,077.5	1,077.5	1,077.5	0.0
E	15,300	702	14,700	5.4	1,082.6	1,082.6	1,083.6	1.0
F	17,685	491	12,500	6.3	1,084.3	1,084.3	1,085.3	1.0
G	23,210	419	11,450	6.9	1,090.2	1,090.2	1,091.2	1.0
H	26,230	513[2]	11,600	4.4	1,091.1	1,091.1	1,092.1	1.0
I	31,810	547[2]	12,000	4.6	1,092.7	1,092.7	1,093.7	1.0
J	35,380	945[2]	12,300	4.1	1,094.8	1,094.8	1,095.8	1.0
K	40,280	807[2]	8,800	5.7	1,100.2	1,100.2	1,101.2	1.0
L	43,955	342[2]	7,100	7.0	1,104.1	1,104.1	1,105.1	1.0
M	46,925	400[2]	8,500	5.9	1,107.0	1,107.0	1,108.0	1.0
N	53,205	289	7,600	6.3	1,113.0	1,113.0	1,114.0	1.0
O	71,055	387	6,950	6.9	1,133.4	1,133.4	1,133.4	0.0
P	72,165	303	7,950	6.0	1,136.1	1,136.1	1,137.1	1.0
Q	75,195	465	7,400	6.4	1,138.8	1,138.8	1,139.8	1.0
R	79,945	277	6,500	7.2	1,143.1	1,143.1	1,144.1	1.0
S	81,470	*	*	*	1,145.2	1,145.2	*	*
T	83,700	*	*	*	1,148.2	1,148.2	*	*
U	85,010	*	*	*	1,151.2	1,151.2	*	*
V	88,410	*	*	*	1,154.6	1,154.6	*	*
W	94,470	*	*	*	1,162.2	1,162.2	*	*

[1]Feet above confluence with South Fork Shenandoah River
[2]This width extends beyond county boundary
*Data not available

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
North River (continued)								
X	100,140	*	*	*	1,169.6	1,169.6	*	*
Y	103,810	*	*	*	1,172.0	1,172.0	*	*
Z	106,070	*	*	*	1,175.8	1,175.8	*	*
AA	107,550	*	*	*	1,179.6	1,179.6	*	*
AB	108,820	*	*	*	1,186.9	1,186.9	*	*
AC	112,170	*	*	*	1,196.8	1,196.8	*	*
AD	113,640	*	*	*	1,199.6	1,199.6	*	*
AE	116,690	*	*	*	1,203.9	1,203.9	*	*
AF	120,690	*	*	*	1,209.8	1,209.8	*	*
AG	123,830	*	*	*	1,212.8	1,212.8	*	*
AH	127,190	*	*	*	1,219.3	1,219.3	*	*
AI	129,240	*	*	*	1,222.2	1,222.2	*	*
AJ	130,440	*	*	*	1,224.8	1,224.8	*	*
AK	130,890	*	*	*	1,225.9	1,225.9	*	*
AL	135,060	*	*	*	1,235.2	1,235.2	*	*
AM	135,230	*	*	*	1,235.9	1,235.9	*	*
AN	136,070	*	*	*	1,237.0	1,237.0	*	*
AO	138,470	*	*	*	1,244.8	1,244.8	*	*
AP	142,240	*	*	*	1,257.1	1,257.1	*	*
AQ	145,460	*	*	*	1,268.0	1,268.0	*	*
AR	148,880	*	*	*	1,276.2	1,276.2	*	*

[1]Feet above confluence with South Fork Shenandoah River

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

NORTH RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Shoemaker River								
A	9,610	*	*	*	1,141.2	1,141.2	*	*
B	15,225	*	*	*	1,177.3	1,177.3	*	*
C	19,080	*	*	*	1,199.4	1,199.4	*	*
D	22,495	*	*	*	1,229.1	1,229.1	*	*
E	26,325	*	*	*	1,259.7	1,259.7	*	*
F	26,480	*	*	*	1,260.2	1,260.2	*	*
G	29,405	*	*	*	1,279.5	1,279.5	*	*
H	30,805	*	*	*	1,296.1	1,296.1	*	*
I	32,010	*	*	*	1,306.2	1,306.2	*	*
J	34,045	*	*	*	1,332.3	1,332.3	*	*
K	36,845	*	*	*	1,374.1	1,374.1	*	*
L	38,160	*	*	*	1,388.9	1,388.9	*	*
M	38,320	*	*	*	1,390.3	1,390.3	*	*
N	39,460	*	*	*	1,402.9	1,402.9	*	*
O	41,640	*	*	*	1,450.7	1,450.7	*	*
P	43,990	*	*	*	1,490.5	1,490.5	*	*

[1]Feet above confluence with North Fork Shenandoah River

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

SHOEMAKER RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Mill Creek								
A	2,780[1]	*	*	*	1,073.6	1,073.6	*	*
B	4,820[1]	*	*	*	1,080.3	1,080.3	*	*
C	5,190[1]	*	*	*	1,081.6	1,081.6	*	*
D	8,400[1]	*	*	*	1,095.8	1,095.8	*	*
E	8,760[1]	*	*	*	1,097.9	1,097.9	*	*
F	9,490[1]	*	*	*	1,100.3	1,100.3	*	*
G	11,490[1]	*	*	*	1,107.0	1,107.0	*	*
H	13,310[1]	*	*	*	1,112.1	1,112.1	*	*
I	14,650[1]	*	*	*	1,115.3	1,115.3	*	*
J	16,990[1]	*	*	*	1,120.3	1,120.3	*	*
K	18,420[1]	*	*	*	1,126.5	1,126.5	*	*
L	21,180[1]	*	*	*	1,147.6	1,147.6	*	*
M	21,550[1]	*	*	*	1,152.5	1,152.5	*	*
N	22,930[1]	*	*	*	1,157.7	1,157.7	*	*
Congers Creek								
A	510[2]	*	*	*	1,124.8	1,124.8	*	*
B	3.400[2]	*	*	*	1,144.6	1,144.6	*	*
C	6,410[2]	*	*	*	1,164.1	1,164.1	*	*
D	8,110[2]	*	*	*	1,177.8	1,177.8	*	*
E	10,330[2]	*	*	*	1,188.5	1,188.5	*	*
F	12,245[2]	*	*	*	1,204.5	1,204.5	*	*
G	12,970[2]	*	*	*	1,215.9	1,215.9	*	*

[1]Feet above confluence with North River
[2]Feet above confluence with Mill Creek
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

MILL CREEK - CONGERS CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Congers Creek (continued)								
H	13,760[1]	*	*	*	1,226.7	1,226.7	*	*
I	17,185[1]	*	*	*	1,278.0	1,278.0	*	*
Pleasant Run								
A	2,680[2]	*	*	*	1,145.7	1,145.7	*	*
B	3,700[2]	*	*	*	1,150.9	1,150.9	*	*
C	4,230[2]	*	*	*	1,155.6	1,155.6	*	*
D	6,030[2]	*	*	*	1,168.4	1,168.4	*	*
E	7,190[2]	*	*	*	1,175.3	1,175.3	*	*
F	9,830[2]	*	*	*	1,193.3	1,193.3	*	*
G	11,630[2]	*	*	*	1,198.4	1,198.4	*	*
H	11,970[2]	*	*	*	1,204.8	1,204.8	*	*
I	12,480[2]	*	*	*	1,207.9	1,207.9	*	*
J	14,520[2]	*	*	*	1,213.9	1,213.9	*	*
K	14,760[2]	*	*	*	1,216.5	1,216.5	*	*
L	16,070[2]	*	*	*	1,223.0	1,223.0	*	*
M	16,450[2]	*	*	*	1,234.6	1,234.6	*	*
N	17,440[2]	*	*	*	1,235.9	1,235.9	*	*
O	19,730[2]	*	*	*	1,259.0	1,259.0	*	*
P	20,290[2]	*	*	*	1,261.6	1,261.6	*	*
Q	21,670[2]	*	*	*	1,272.8	1,272.8	*	*

[1]Feet above confluence with Mill Creek
[2]Feet above confluence with North River
*Data not available

BEST COPY AVAILABLE

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

CONGERS CREEK - PLEASANT RUN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Pleasant Run (continued)								
R	23,320[1]	*	*	*	1,289.2	1,289.2	*	*
S	23,470[1]	*	*	*	1,295.3	1,295.3	*	*
T	25,810[1]	*	*	*	1,309.7	1,309.7	*	*
U	27,550[1]	*	*	*	1,326.7	1,326.7	*	*
Duck Run								
A	680[2]	*	*	*	1,117.3	1,117.3	*	*
B	2,130[2]	*	*	*	1,122.5	1,122.5	*	*
Cooks Creek								
A	16,600[1]	*	*	*	1,173.7	1,173.7	*	*
B	23,885[1]	*	*	*	1,186.2	1,186.2	*	*
C	30,815[1]	*	*	*	1,195.8	1,195.8	*	*
D	35,885[1]	*	*	*	1,199.0	1,199.0	*	*
E	38,630[1]	*	*	*	1,201.6	1,201.6	*	*
F	40,950[1]	*	*	*	1,204.8	1,204.8	*	*
G	41,410[1]	*	*	*	1,206.6	1,206.6	*	*
H	46,600[1]	*	*	*	1,230.8	1,230.8	*	*
I	48,980[1]	*	*	*	1,239.8	1,239.8	*	*
J	51,420[1]	*	*	*	1,248.4	1,248.4	*	*
K	55,435[1]	*	*	*	1,266.3	1,266.3	*	*

[1]Feet above confluence with North River
[2]Feet above confluence with Mill Creek
*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

PLEASANT RUN - DUCK RUN - COOKS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Cooks Creek (continued)								
L	58,390[1]	*	*	*	1,274.3	1,274.3	*	*
M	61,125[1]	*	*	*	1,285.8	1,285.8	*	*
N	62,655[1]	*	*	*	1,291.4	1,291.4	*	*
O	66,590[1]	*	*	*	1,317.1	1,317.1	*	*
P	68,980[1]	*	*	*	1,343.4	1,343.4	*	*
Blacks Run								
A	230[2]	*	*	*	1,171.4	1,171.4	*	*
B	2,300[2]	*	*	*	1,177.1	1,177.1	*	*
C	2,420[2]	*	*	*	1,178.0	1,178.0	*	*
D	2,990[2]	*	*	*	1,178.8	1,178.8	*	*
E	3,120[2]	*	*	*	1,179.8	1,179.8	*	*
F	7,040[2]	*	*	*	1,184.9	1,184.9	*	*
G	9,360[2]	*	*	*	1,190.4	1,190.4	*	*
H	10,980[2]	*	*	*	1,195.8	1,195.8	*	*
I	11,130[2]	*	*	*	1,198.1	1,198.1	*	*
J	13,400[2]	*	*	*	1,201.4	1,201.4	*	*
West Fork Cooks Creek								
A	780[2]	*	*	*	1,238.9	1,238.9	*	*
B	980[2]	*	*	*	1,241.1	1,241.1	*	*

[1]Feet above confluence with North River
[2]Feet above confluence with Cooks Creek
*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

COOKS CREEK - BLACKS RUN - WEST FORK COOKS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Sunset Heights Branch								
A	1,630	*	*	*	1,209.8	1,209.8	*	*
B	2,700	*	*	*	1,215.1	1,215.1	*	*
C	2,820	*	*	*	1,218.3	1,218.3	*	*
D	4,120	*	*	*	1,220.6	1,220.6	*	*
E	5,650	*	*	*	1,231.5	1,231.5	*	*
F	5,750	*	*	*	1,234.5	1,234.5	*	*
G	7,440	*	*	*	1,241.4	1,241.4	*	*
H	7,530	*	*	*	1,242.6	1,242.6	*	*
I	8,540	*	*	*	1,246.8	1,246.8	*	*
J	8,700	*	*	*	1,249.6	1,249.6	*	*
K	10,740	*	*	*	1,259.4	1,259.4	*	*

[1]Feet above confluence with Cooks Creek

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

SUNSET HEIGHTS BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Dry River								
A	5,890	*	*	*	1,220.2	1,220.2	*	*
B	6,130	*	*	*	1,221.2	1,221.2	*	*
C	7,720	*	*	*	1,232.2	1,232.2	*	*
D	16,630	*	*	*	1,292.6	1,292.6	*	*
E	17,180	*	*	*	1,295.4	1,295.4	*	*
F	25,310	*	*	*	1,358.0	1,358.0	*	*
G	30,230	*	*	*	1,408.0	1,408.0	*	*
H	32,900	*	*	*	1,429.8	1,429.8	*	*
I	33,230	*	*	*	1,431.6	1,431.6	*	*
J	39,420	*	*	*	1,490.4	1,490.4	*	*
K	39,750	*	*	*	1,495.8	1,495.8	*	*
L	40,240	*	*	*	1,500.6	1,500.6	*	*
M	41,245	*	*	*	1,512.2	1,512.2	*	*
N	43,965	*	*	*	1,533.9	1,533.9	*	*
O	46,940	*	*	*	1,559.6	1,559.6	*	*
P	49,300	*	*	*	1,583.0	1,583.0	*	*
Q	52,080	*	*	*	1,609.4	1,609.4	*	*

[1]Feet above confluence with North River

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

54

DRY RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Dry River (continued)								
R	52,700[1]	*	*	*	1,613.8	1,613.8	*	*
S	52,865[1]	*	*	*	1,615.8	1,615.8	*	*
T	59,010[1]	*	*	*	1,675.6	1,675.6	*	*
Muddy Creek								
A	8,480[2]	*	*	*	1,299.5	1,299.5	*	*
B	8,780[2]	*	*	*	1,301.2	1,301.2	*	*
C	12,300[2]	*	*	*	1,308.5	1,308.5	*	*
D	14,760[2]	*	*	*	1,321.1	1,321.1	*	*
E	18,650[2]	*	*	*	1,332.8	1,332.8	*	*
F	19,120[2]	*	*	*	1,336.3	1,336.3	*	*
G	19,450[2]	*	*	*	1,338.2	1,338.2	*	*
H	21,700[2]	*	*	*	1,342.9	1,342.9	*	*
I	23,320[2]	*	*	*	1,347.1	1,347.1	*	*
J	25,970[2]	*	*	*	1,356.6	1,356.6	*	*
K	29,450[2]	*	*	*	1,370.8	1,370.8	*	*
L	29,930[2]	*	*	*	1,372.9	1,372.9	*	*
M	33,110[2]	*	*	*	1,387.0	1,387.0	*	*
N	35,990[2]	*	*	*	1,396.9	1,396.9	*	*
O	38,630[2]	*	*	*	1,407.7	1,407.7	*	*
P	40,090[2]	*	*	*	1,412.9	1,412.9	*	*

[1]Feet above confluence with North River
[2]Feet above confluence with Dry River
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

DRY RIVER - MUDDY CREEK

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Muddy Creek (continued)								
Q	41,620[1]	*	*	*	1,423.4	1,423.4	*	*
R	41,870[1]	*	*	*	1,424.6	1,424.6	*	*
S	42,240[1]	*	*	*	1,426.4	1,426.4	*	*
T	42,870[1]	*	*	*	1,434.3	1,434.3	*	*
U	43,580[1]	*	*	*	1,444.4	1,444.4	*	*
V	44,800[1]	*	*	*	1,450.5	1,450.5	*	*
W	46,790[1]	*	*	*	1,461.9	1,461.9	*	*
X	48,130[1]	*	*	*	1,473.5	1,473.5	*	*
Y	49,630[1]	*	*	*	1,487.2	1,487.2	*	*
Z	51,870[1]	*	*	*	1,507.5	1,507.5	*	*
AA	53,400[1]	*	*	*	1,523.8	1,523.8	*	*
AB	55,050[1]	*	*	*	1,545.0	1,545.0	*	*
AC	56,920[1]	*	*	*	1,575.9	1,575.9	*	*
Buttermilk Run								
A	150[2]	*	*	*	1,356.9	1,356.9	*	*
B	1,000[2]	*	*	*	1,362.7	1,362.7	*	*
C	1,140[2]	*	*	*	1,364.6	1,364.6	*	*
D	2,730[2]	*	*	*	1,375.7	1,375.7	*	*
E	4,200[2]	*	*	*	1,388.1	1,388.1	*	*
F	4,360[2]	*	*	*	1,390.1	1,390.1	*	*

[1]Feet above confluence with Dry River
[2]Feet above confluence with War Branch
*Data not available

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FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

52

MUDDY CREEK - BUTTERMILK RUN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Buttermilk Run (continued)								
G	6,580[1]	*	*	*	1,407.9	1,407.9	*	*
H	8,520[1]	*	*	*	1,431.1	1,431.1	*	*
I	9,570[1]	*	*	*	1,443.0	1,443.0	*	*
J	10,230[1]	*	*	*	1,454.3	1,454.3	*	*
Snapp Creek								
A	1,290[2]	*	*	*	1,412.6	1,412.6	*	*
B	1,470[2]	*	*	*	1,414.2	1,414.2	*	*
C	2,430[2]	*	*	*	1,420.1	1,420.1	*	*
D	4,590[2]	*	*	*	1,438.3	1,438.3	*	*
E	4,760[2]	*	*	*	1,440.0	1,440.0	*	*
F	5,180[2]	*	*	*	1,448.1	1,448.1	*	*
G	6,890[2]	*	*	*	1,463.7	1,463.7	*	*
H	9,520[2]	*	*	*	1,487.7	1,487.7	*	*
War Branch								
A	1,330[2]	*	*	*	1,338.0	1,338.0	*	*
B	4,630[2]	*	*	*	1,354.6	1,354.6	*	*
C	5,020[2]	*	*	*	1,356.3	1,356.3	*	*
D	8,480[2]	*	*	*	1,376.2	1,376.2	*	*
E	10,170[2]	*	*	*	1,388.9	1,388.9	*	*

[1]Feet above confluence with War Branch
[2]Feet above confluence with Muddy Creek
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

BUTTERMILK RUN - SNAPP CREEK - WAR BRANCH

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Linville Creek								
A	8,130	*	*	*	1,051.5	1,051.5	*	*
B	10,030	*	*	*	1,054.2	1,054.2	*	*
C	12,740	*	*	*	1,065.8	1,065.8	*	*
D	15,120	*	*	*	1,071.4	1,071.4	*	*
E	17,730	*	*	*	1,077.0	1,077.0	*	*
F	20,030	*	*	*	1,082.3	1,082.3	*	*
G	20,270	*	*	*	1,084.7	1,084.7	*	*
H	20,840	*	*	*	1,085.1	1,085.1	*	*
I	23,780	*	*	*	1,095.5	1,095.5	*	*
J	26,770	*	*	*	1,116.1	1,116.1	*	*
K	28,520	*	*	*	1,121.0	1,121.0	*	*
L	29,480	*	*	*	1,122.6	1,122.6	*	*
M	29,680	*	*	*	1,123.5	1,123.5	*	*
N	30,800	*	*	*	1,124.9	1,124.9	*	*
O	33,920	*	*	*	1,133.1	1,133.1	*	*
P	34,880	*	*	*	1,136.0	1,136.0	*	*
Q	35,540	*	*	*	1,137.7	1,137.7	*	*
R	35,720	*	*	*	1,138.5	1,138.5	*	*
S	36,970	*	*	*	1,141.1	1,141.1	*	*
T	37,270	*	*	*	1,146.6	1,146.6	*	*
U	37,470	*	*	*	1,147.1	1,147.1	*	*

[1]Feet above confluence with North Fork Shenandoah River

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

LINVILLE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY	INCREASE
Mountain Run								
A	860	*	*	*	1,188.6	1,188.6	*	*
B	1,885	*	*	*	1,199.5	1,199.5	*	*
C	3,430	*	*	*	1,220.2	1,220.2	*	*
D	4,960	*	*	*	1,241.4	1,241.4	*	*
E	5,140	*	*	*	1,244.9	1,244.9	*	*
F	7,220	*	*	*	1,273.0	1,273.0	*	*
G	8,390	*	*	*	1,302.8	1,302.8	*	*
Dry Fork								
A	1,900	*	*	*	1,093.2	1,093.2	*	*
B	2,120	*	*	*	1,097.0	1,097.0	*	*
C	4,620	*	*	*	1,108.2	1,108.2	*	*
D	7,020	*	*	*	1,123.5	1,123.5	*	*
E	8,140	*	*	*	1,131.5	1,131.5	*	*
F	9,980	*	*	*	1,137.7	1,137.7	*	*
G	10,400	*	*	*	1,138.8	1,138.8	*	*
H	12,000	*	*	*	1,144.3	1,144.3	*	*
I	13,600	*	*	*	1,149.6	1,149.6	*	*
J	14,080	*	*	*	1,154.1	1,154.1	*	*
K	15,070	*	*	*	1,154.7	1,154.7	*	*
L	15,370	*	*	*	1,156.0	1,156.0	*	*
M	17,120	*	*	*	1,159.1	1,159.1	*	*
N	19,700	*	*	*	1,169.5	1,169.5	*	*

[1]Feet above confluence with Smith Creek

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

MOUNTAIN RUN - DRY FORK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Dry Fork (continued)								
O	22,520	*	*	*	1,186.8	1,186.8	*	*
P	24,810	*	*	*	1,202.6	1,202.6	*	*
Q	25,190	*	*	*	1,206.3	1,206.3	*	*
R	25,860	*	*	*	1,208.7	1,208.7	*	*
S	26,390	*	*	*	1,210.4	1,210.4	*	*
T	27,380	*	*	*	1,212.1	1,212.1	*	*
U	27,660	*	*	*	1,216.4	1,216.4	*	*
V	29,190	*	*	*	1,217.0	1,217.0	*	*
W	30,180	*	*	*	1,221.5	1,221.5	*	*
X	32,320	*	*	*	1,230.5	1,230.5	*	*
Y	32,640	*	*	*	1,231.6	1,231.6	*	*
Z	34,640	*	*	*	1,240.5	1,240.5	*	*
AA	37,020	*	*	*	1,251.6	1,251.6	*	*
AB	38,190	*	*	*	1,258.7	1,258.7	*	*
AC	40,300	*	*	*	1,269.7	1,269.7	*	*
AD	42,650	*	*	*	1,281.4	1,281.4	*	*
AE	44,700	*	*	*	1,304.8	1,304.8	*	*

[1]Feet above confluence with Smith Creek

*Data not available

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
South River								
A	790	352	5,045	5.1	1,060.8	1,057.1[3]	1,058.1	1.0
B	980	394	5,476	4.7	1,060.8	1,057.8[3]	1,058.8	1.0
C	6,390	1,886	9,466	2.7	1,065.1	1,065.1	1,066.1	1.0
D	11,170	1,409	7,571	3.3	1,077.0	1,077.0	1,078.0	1.0
E	19,820	594/215[2]	4,068	6.0	1,097.4	1,097.4	1,098.4	1.0

[1]Feet above confluence with South Fork Shenandoah River

[2]Width/width within county boundary

[3]Elevation computed without consideration of backwater from South Fork Shenandoah River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

SOUTH RIVER

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Briery Branch								
A	215	*	*	*	1,227.8	1,227.0[2]	*	*
B	1,650	*	*	*	1,232.9	1,232.0[2]	*	*
C	1,860	*	*	*	1,233.4	1,233.4	*	*
D	3,990	*	*	*	1,248.1	1,248.1	*	*
E	6,420	*	*	*	1,263.7	1,263.7	*	*
F	6,630	*	*	*	1,265.9	1,265.9	*	*
G	7,245	*	*	*	1,269.9	1,269.9	*	*
H	9,855	*	*	*	1,291.4	1,291.4	*	*
I	10,900	*	*	*	1,304.2	1,304.2	*	*
J	11,110	*	*	*	1,305.7	1,305.7	*	*
K	12,430	*	*	*	1,317.8	1,317.8	*	*
L	14,350	*	*	*	1,345.3	1,345.3	*	*
M	17,465	*	*	*	1,376.0	1,376.0	*	*
N	19,660	*	*	*	1,400.9	1,400.9	*	*
O	20,225	*	*	*	1,407.7	1,407.7	*	*
P	23,200	*	*	*	1,437.2	1,437.2	*	*
Q	26,920	*	*	*	1,487.4	1,487.4	*	*
R	27,210	*	*	*	1,491.1	1,491.1	*	*
S	28,800	*	*	*	1,508.2	1,508.2	*	*
T	31,140	*	*	*	1,544.2	1,544.2	*	*
U	36,210	*	*	*	1,607.9	1,607.9	*	*
V	38,675	*	*	*	1,644.6	1,644.6	*	*

[1]Feet above confluence with North River

[2]Elevation computed without consideration of backwater from North River

*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

62

BRIERY BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Linville Creek (continued)								
V	38,960	*	*	*	1,147.2	1,147.2	*	*
W	40,580	*	*	*	1,154.9	1,154.9	*	*
X	40,770	*	*	*	1,157.3	1,157.3	*	*
Y	41,620	*	*	*	1,159.5	1,159.5	*	*
Z	42,830	*	*	*	1,161.0	1,161.0	*	*
AA	43,020	*	*	*	1,162.0	1,162.0	*	*
AB	45,420	*	*	*	1,167.2	1,167.2	*	*
AC	47,280	*	*	*	1,172.2	1,172.2	*	*
AD	48,220	*	*	*	1,175.8	1,175.8	*	*
AE	48,480	*	*	*	1,177.2	1,177.2	*	*
AF	48,720	*	*	*	1,179.9	1,179.9	*	*
AG	50,650	*	*	*	1,183.2	1,183.2	*	*
AH	53,460	*	*	*	1,194.1	1,194.1	*	*
AI	55,150	*	*	*	1,200.0	1,200.0	*	*
AJ	56,150	*	*	*	1,203.5	1,203.5	*	*
AK	56,360	*	*	*	1,204.5	1,204.5	*	*
AL	57,280	*	*	*	1,213.1	1,213.1	*	*

[1]Feet above confluence with North Fork Shenandoah River
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

LINVILLE CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
West Fork Creek								
A	365[1]	*	*	*	1,185.0	1,185.0	*	*
B	585[1]	*	*	*	1,186.2	1,186.2	*	*
C	1,210[1]	*	*	*	1,192.7	1,192.7	*	*
D	2,035[1]	*	*	*	1,198.6	1,198.6	*	*
E	5,210[1]	*	*	*	1,221.4	1,221.4	*	*
F	6,910[1]	*	*	*	1,231.3	1,231.3	*	*
Joes Creek								
A	1,770[1]	*	*	*	1,159.6	1,159.6	*	*
B	5,680[1]	*	*	*	1,193.2	1,193.2	*	*
C	7,975[1]	*	*	*	1,217.7	1,217.7	*	*
D	9,660[1]	*	*	*	1,241.1	1,241.1	*	*
Smith Creek								
A	3,210[2]	*	*	*	977.4	977.4	*	*
B	6,790[2]	*	*	*	984.8	984.8	*	*
C	6,960[2]	*	*	*	985.8	985.8	*	*
D	8,810[2]	*	*	*	990.8	990.8	*	*
E	11,580[2]	*	*	*	996.9	996.9	*	*
F	12,400[2]	*	*	*	997.8	997.8	*	*
G	13,200[2]	*	*	*	998.9	998.9	*	*
H	13,390[2]	*	*	*	1,001.0	1,001.0	*	*

[1]Feet above confluence with Linville Creek
[2]Feet from county boundary
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

64 **WEST FORK CREEK - JOES CREEK - SMITH CREEK**

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Smith Creek (continued)								
I	15,510	*	*	*	1,003.1	1,003.1	*	*
J	18,480	*	*	*	1,005.3	1,005.3	*	*
K	21,500	*	*	*	1,011.0	1,011.0	*	*
L	21,670	*	*	*	1,012.3	1,012.3	*	*
M	22,480	*	*	*	1,012.8	1,012.8	*	*
N	22,610	*	*	*	1,012.8	1,012.8	*	*
O	23,400	*	*	*	1,013.9	1,013.9	*	*
P	25,250	*	*	*	1,017.7	1,017.7	*	*
Q	25,470	*	*	*	1,018.6	1,018.6	*	*
R	27,970	*	*	*	1,023.0	1,023.0	*	*
S	32,010	*	*	*	1,031.9	1,031.9	*	*
T	32,330	*	*	*	1,034.1	1,034.1	*	*
U	33,980	*	*	*	1,037.0	1,037.0	*	*
V	36,810	*	*	*	1,041.0	1,041.0	*	*
W	40,160	*	*	*	1,051.0	1,051.0	*	*
X	42,250	*	*	*	1,055.7	1,055.7	*	*
Y	42,530	*	*	*	1,057.0	1,057.0	*	*
Z	44,310	*	*	*	1,058.7	1,058.7	*	*
AA	44,500	*	*	*	1,059.4	1,059.4	*	*
AB	46,480	*	*	*	1,062.6	1,062.6	*	*
AC	49,400	*	*	*	1,066.8	1,066.8	*	*
AD	51,690	*	*	*	1,070.9	1,070.9	*	*

[1]Feet from county boundary
*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

SMITH CREEK

BEST COPY AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Smith Creek (continued)								
AE	53,270	*	*	*	1,072.7	1,072.7	*	*
AF	58,580	*	*	*	1,084.2	1,084.2	*	*
AG	60,870	*	*	*	1,091.6	1,091.6	*	*
AH	64,130	*	*	*	1,100.9	1,100.9	*	*
AI	67,580	*	*	*	1,114.6	1,114.6	*	*
AJ	67,780	*	*	*	1,118.7	1,118.7	*	*
AK	70,610	*	*	*	1,128.8	1,128.8	*	*
AL	74,250	*	*	*	1,147.6	1,147.6	*	*
AM	74,600	*	*	*	1,152.7	1,152.7	*	*
AN	76,400	*	*	*	1,158.1	1,158.1	*	*
AO	78,800	*	*	*	1,166.9	1,166.9	*	*
AP	80,520	*	*	*	1,179.2	1,179.2	*	*
AQ	83,090	*	*	*	1,188.6	1,188.6	*	*
AR	86,080	*	*	*	1,202.9	1,202.9	*	*
AS	89,290	*	*	*	1,230.6	1,230.6	*	*
AT	91,760	*	*	*	1,259.4	1,259.4	*	*
AU	94,010	*	*	*	1,276.6	1,276.6	*	*
AV	96,700	*	*	*	1,306.2	1,306.2	*	*
AW	98,650	*	*	*	1,340.5	1,340.5	*	*
AX	100,580	*	*	*	1,382.8	1,382.8	*	*

[1]Feet from county boundary
*Data not available

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TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOODWAY DATA

66

SMITH CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
Mossy Creek								
A	1,850	*	*	*	1,221.2	1,221.2	*	*
B	5,480	*	*	*	1,228.5	1,228.5	*	*
C	6,580	*	*	*	1,230.9	1,230.9	*	*
D	6,750	*	*	*	1,231.4	1,231.4	*	*
E	10,600	*	*	*	1,235.4	1,235.4	*	*

[1]Feet above confluence with North River

*Data not available

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOODWAY DATA

MOSSY CREEK

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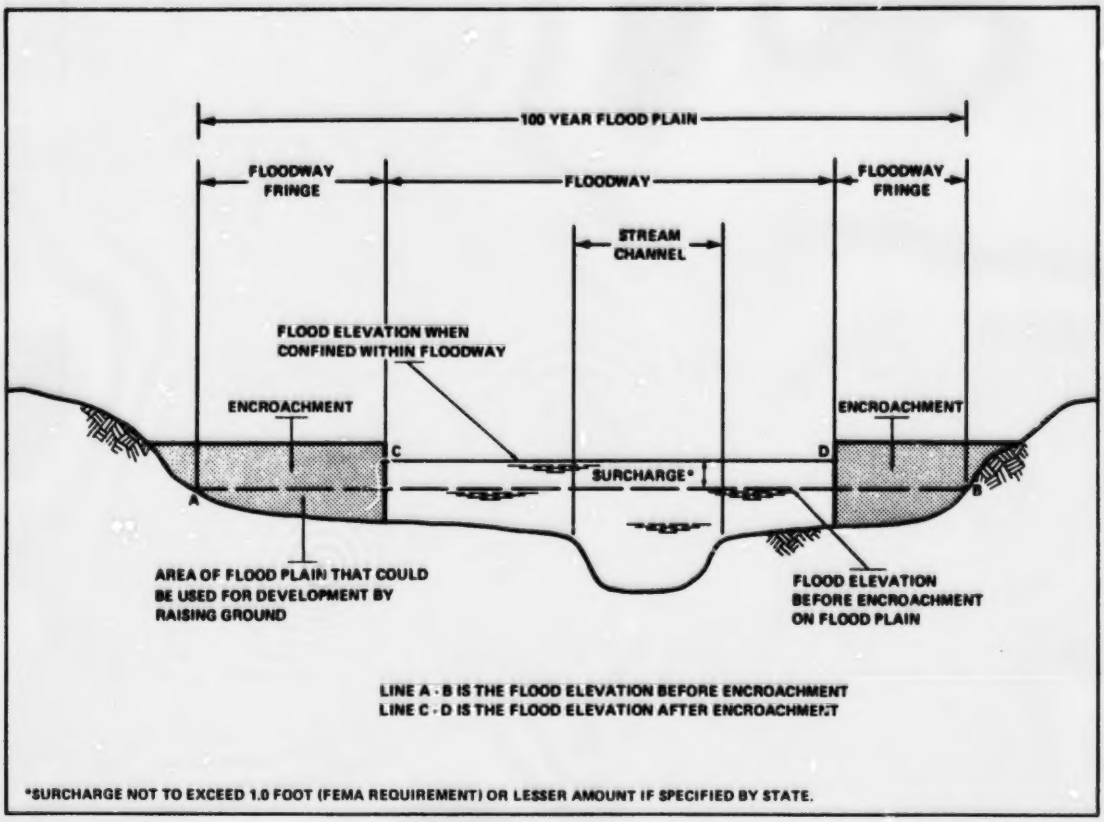
100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 22

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail in Rockingham County.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

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Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of Rockingham County are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

The FHF for the North River and the Dry River was determined by approximating the 10-year profile to be 3 feet above the top of the channel banks. In several instances, however, data for the FHF were taken directly from contiguous communities which share a common boundary with these rivers.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
North Fork Shenandoah River							
Reach 1	07,14	-5.6	-1.4	+7.0	055	A11	Varies
Reach 2	14	-4.0	-1.1	+2.3	040	A8	Varies
Reach 3	14,22	-7.5	-2.3	+6.1	075	A15	Varies
Reach 4	21,22	-6.7	-2.0	+5.1	065	A13	Varies
Reach 5	21	-6.8	-2.1	+5.4	070	A14	Varies
Reach 6	20,21	-3.2	-1.0	+2.1	030	A6	Varies
Reach 7	10,11, 20	-3.6	-11.1	+2.4	035	A7	Varies
Little Dry River							
Reach 1	20,28, 29,38	-1.8	-0.6	+1.2	020	A4	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

70

NORTH FORK SHENANDOAH RIVER - LITTLE DRY RIVER

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Runion Creek							
Reach 1	04, 12, 21	-2.8	-1.1	+1.7	030	A6	Varies
Capon Run							
Reach 1	03, 11	-2.7	-0.5	+1.5	025	A5	Varies
German River							
Reach 1	10, 18	-2.0	-0.6	+1.1	020	A4	Varies
Bennett Run							
Reach 1	10	-1.6	-0.5	+1.1	015	A3	Varies
Crab Run							
Reach 1	03, 10	-1.6	-0.5	+1.1	015	A3	Varies
Overly Run							
Reach 1	10	-1.4	-0.4	+0.8	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

RUNION CREEK - CAPON RUN - GERMAN RIVER
BENNETT RUN - CRAB RUN - OVERLY RUN

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
South Fork Shenandoah River							
Reach 1	34,45, 46,56, 57,67, 68,77, 78,87	-7.6	-1.9	+5.8	075	A15	Varies
Naked Creek							
Reach 1	34,35	-1.9	-0.5	+0.9	020	A4	Varies
South Branch Naked Creek							
Reach 1	35,36	-1.6	*	*	015	A3	Varies
Dry Run							
Reach 1	35,36, 45,46	-1.2	-0.3	+1.1	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

*Data not available

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

72

SOUTH FORK SHENANDOAH RIVER - NAKED CREEK
SOUTH BRANCH NAKED CREEK - DRY RUN

BEST COPY AVAILABLE

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Elk Run							
Reach 1	46	-2.2	-0.7	+1.2	020	A4	Varies
Reach 2	46,47	-1.3	-0.3	+0.8	015	A3	Varies
West Swift Run							
Reach 1	46,47	-1.4	-0.5	+0.5	015	A3	Varies
Wolf Run							
Reach 1	46	-1.2	-0.3	+0.3	010	A2	Varies
Lee Run							
Reach 1	46	-1.3	-0.4	+0.5	015	A3	Varies
Hawksbill Creek							
Reach 1	57,58, 68,69	-2.1	-0.6	+1.1	020	A4	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

ELK RUN - WEST SWIFT RUN
WOLK RUN - LEE RUN - HAWKSBILL CREEK

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
East Hawksbill Creek							
Reach 1	57,58	-1.6	-0.5	+0.9	015	A3	Varies
Big Run							
Reach 1	78	-1.5	-0.4	+0.8	015	A3	Varies
Madison Run							
Reach 1	87,97, 98	-1.6	-0.5	+1.0	015	A3	Varies
Onemile Run							
Reach 1	67,68	-1.4	-0.3	+0.6	015	A3	Varies
Twomile Run							
Reach 1	67,68	-2.1	-0.5	+0.8	020	A4	Varies
Reach 2	68	-1.0	-0.3	+0.7	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

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TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

74 **EAST HAWKSBILL CREEK - BIG RUN - MADISON RUN ONEMILE RUN - TWOMILE RUN**

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Cub Run							
Reach 1	77,78	-3.6	-1.3	+1.7	035	A7	Varies
Reach 2	66,76, 77	-2.2	-0.7	+1.1	020	A4	Varies
Reach 3	66	-1.2	-0.4	+0.5	010	A2	Varies
Boone Run							
Reach 1	45	-1.1	-0.4	+0.5	010	A2	Varies
Quail Run							
Reach 1	45,56	-1.1	-0.4	+0.5	010	A2	Varies
Bloomer Spring Run							
Reach 1	45,56	-1.2	-0.5	+0.6	010	A2	Varies
Stony Run							
Reach 1	67	-1.2	-0.3	+0.5	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

CUB RUN - BOONE RUN - QUAIL RUN
BLOOMER SPRING RUN - STONY RUN

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Mill Creek							
Reach 1	86,87	-1.3	-0.5	+0.9	015	A3	Varies
Congers Creek							
Reach 1	76,77, 86	-0.9	-0.3	+0.6	010	A2	Varies
Pleasant Run							
Reach 1	95	-2.6	-1.0	+1.8	025	A5	Varies
Reach 2	85,95	-1.7	-0.5	+0.8	015	A3	Varies
Reach 3	75,85	-0.8	-0.3	+0.6	010	A2	Varies
Duck Run							
Reach 1	86	-1.1	-0.4	+0.3	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

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TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

76 MILL CREEK - CONGERS CREEK - PLEASANT RUN - DUCK RUN

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Shoemaker River							
Reach 1	29,40, 51	-1.8	-0.5	+1.3	020	A4	Varies
North River							
Reach 1	86,87, 95,96, 97	-9.4	-2.4	+5.8	095	A19	Varies
Reach 2	95	-14.2	*	+4.2	140	A24	Varies
Reach 3	95	*	*	+8.0	160	A26	Varies
Reach 4	94,95	-14.2	*	+4.2	140	A24	Varies
Reach 5	94	-9.2	*	*	090	A18	Varies
Reach 6	84,94	-13.6	*	*	140	A24	Varies
Reach 7	84,93,94	-5.5	-3.5	+9.8	055	A11	Varies
Reach 8	93,94	-2.5	-1.5	+3.6	025	A5	Varies
Reach 9	93	-1.6	-1.0	+2.4	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

*Data not available

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

SHOEMAKER RIVER - NORTH RIVER

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Cooks Creek							
Reach 1	84,85	-2.0	-0.8	+2.2	020	A4	Varies
Reach 2	74,84	-1.5	-0.7	+1.7	015	A3	Varies
Reach 3	74,84	-2.0	-0.8	+2.2	020	A4	Varies
Reach 4	74,84	-1.1	-0.4	+1.2	010	A2	Varies
Reach 5	63,74	-2.1	-0.7	+1.4	020	A4	Varies
Blacks Run							
Reach 1	85	-2.4	-0.6	+1.4	025	A5	Varies
West Fork Cooks Creek							
Reach 1	74,84	-0.6	-0.3	+1.0	005	A1	Varies
Sunset Heights Branch							
Reach 1	74,84	-1.3	-0.4	+0.7	015	A3	Varies
Reach 2	64,74	-1.1	-0.3	+0.8	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

BEST COPY AVAILABLE

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

78 COOKS CREEK - BLACKS RUN - WEST FORK COOKS CREEK - SUNSET HEIGHTS BRANCH

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Dry River							
Reach 1	84	-9.5	*	*	095	A19	Varies
Reach 2	84	-3.1	*	+5.6	030	A6	Varies
Reach 3	83,84	-2.6	*	+3.2	025	A5	Varies
Reach 4	72,73, 83,	-1.2	*	+2.5	010	A2	Varies
Reach 5	72	-4.2	*	+3.2	040	A8	Varies
Muddy Creek							
Reach 1	73,83	-2.0	-0.5	+1.1	020	A4	Varies
Reach 2	51,52, 63,73	-1.3	-0.3	+0.9	015	A3	Varies
Buttermilk Run							
Reach 1	73	-0.8	-2.1	+0.5	010	A2	Varies
Snapp Creek							
Reach 1	52,63	-0.8	-0.3	+0.4	010	A2	Varies

*Data not available

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

DRY RIVER - MUDDY CREEK
BUTTERMILK RUN - SNAPP CREEK

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
War Branch							
Reach 1	73	-1.1	-0.3	+0.7	010	A2	Varies
Linville Creek							
Reach 1	22	-3.0	-0.8	+1.7	030	A6	Varies
Reach 2	22,31, 41,42, 53	-2.0	-0.7	+0.7	020	A4	Varies
West Fork Creek							
Reach 1	42,52, 53	-1.3	-0.5	+0.6	015	A3	VAries
Joes Creek							
Reach 1	41,42	-1.0	-0.3	+0.9	010	A2	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

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TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

80

WAR BRANCH - LINVILLE CREEK
WEST FORK CREEK - JOES CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Smith Creek							
Reach 1	08, 15, 23, 32	-5.1	-1.7	+1.8	050	A10	Varies
Reach 2	32	-3.8	-1.2	+1.7	040	A8	Varies
Reach 3	32, 43, 54	-1.8	-0.8	+0.9	020	A4	Varies
Mountain Run							
Reach 1	43	-1.1	-0.3	+0.4	010	A2	Varies
Dry Fork							
Reach 1	32, 43	-1.8	-0.5	+0.6	020	A4	Varies
Reach 2	43, 54	-0.9	-0.2	+0.4	010	A2	Varies
South River							
Reach 1	97	-3.4	-2.4	+5.5	035	A7	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

SMITH CREEK - MOUNTAIN RUN
DRY FORK - SOUTH RIVER

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Briery Branch Reach 1	92,93	-1.7	-3.6	+4.9	015	A3	Varies
Mossy Creek Reach 1	93,94	-1.4	-0.9	+2.6	015	A3	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

82 BRIERY BRANCH - MOSSY CREEK

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Zones A1,A2,A3,A4, A5,A6,A7,A8,A10, A11,A13,A14,A15,, A18,A19,A24,A26:	Special Flood Hazard Areas inundated by the 100-year flood, with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community are shown in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Rockingham County is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

This Flood Insurance Study was prepared by compiling existing hydrologic and hydraulic technical and scientific data prepared by others originally for purposes other than the NFIP. The data was identified as the best available at the time of compilation of this Flood Insurance Study and should depict the general conditions of the flooding sources with relative accuracy. FEMA performed a cursory review and accepted the data as valid for purposes of this Flood Insurance Study and the NFIP. However, if better information is known to exist or has been developed since the date of this report, the information should be immediately forwarded to the Natural and Technological Hazards Division, Federal Emergency Management Agency (Regional Director, Region III Office, Liberty Square Building (Second Floor), 105 South Seventh Street, Philadelphia, Pennsylvania 19106) for consideration for revision of this study.

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Flood Insurance Studies for the Towns of Dayton, Timberville, Broadway, and Mt. Crawford are currently being prepared (References 11, 12, 13, and 14). The results of those studies will be in exact agreement with the results of this study.

Flood Insurance Studies for Shenandoah County and the Towns of Bridgewater, Grottoes, Elkton, and Shenandoah have been completed (References 15, 16, 17, 18, and 19). The results of this study are in exact agreement with the results of those studies.

The SCS has published a number of reports concerning flooding in Rockingham County (References 2, 20, 21, 22, 23, 24, 25, 26, 27, 28, and 29). Those reports were used as the basis for this Flood Insurance Study.

A Flood Hazard Boundary Map has been published for Rockingham County (Reference 10). The differences between the Flood Hazard Boundary Map and this study are justified due to the more detailed nature of this Flood Insurance Study.

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region III Office, Liberty Square Building (Second Floor), 105 South Seventh Street, Philadelphia, Pennsylvania 19106.

8.0 BIBLIOGRAPHY AND REFERENCES

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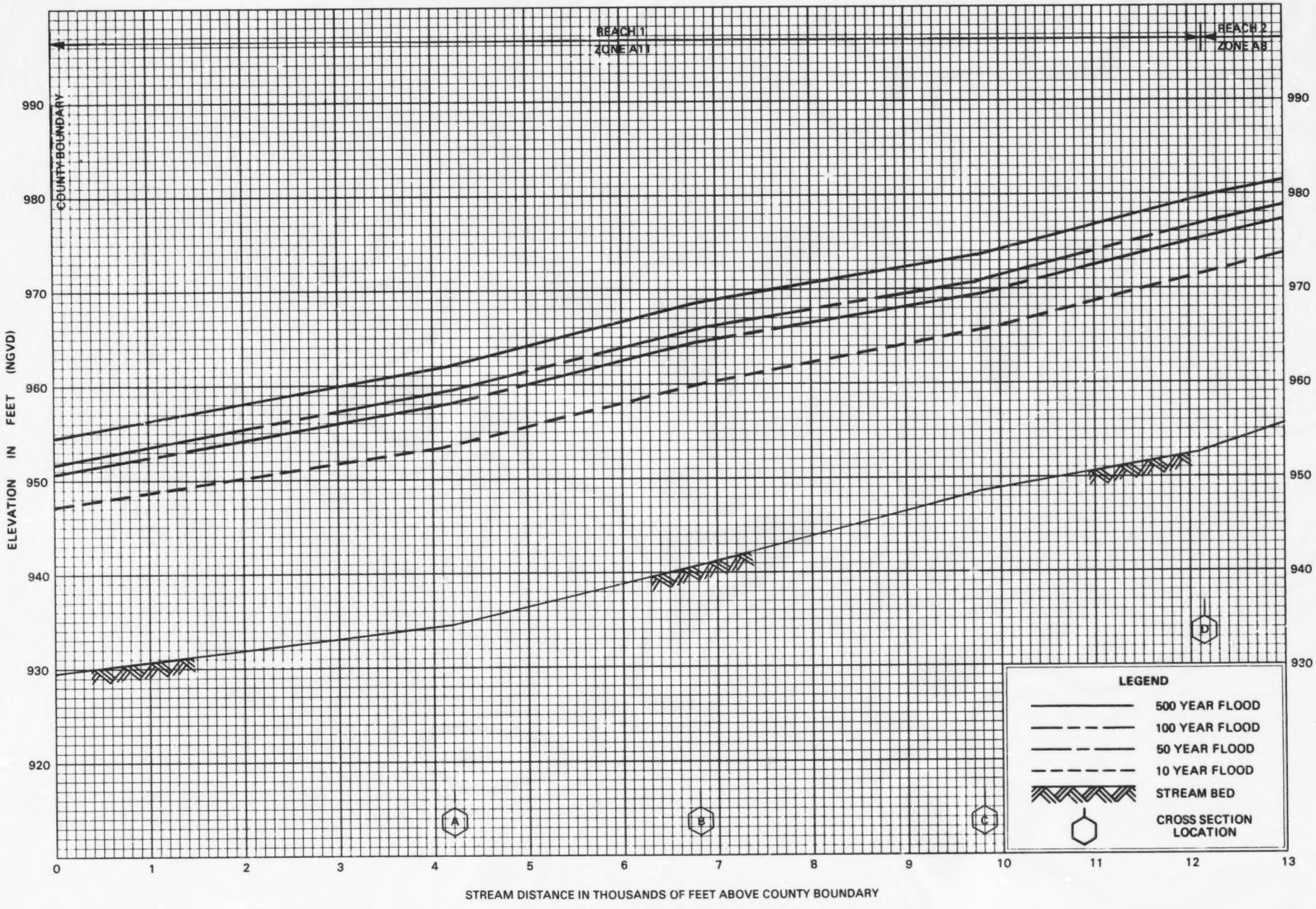

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

01P

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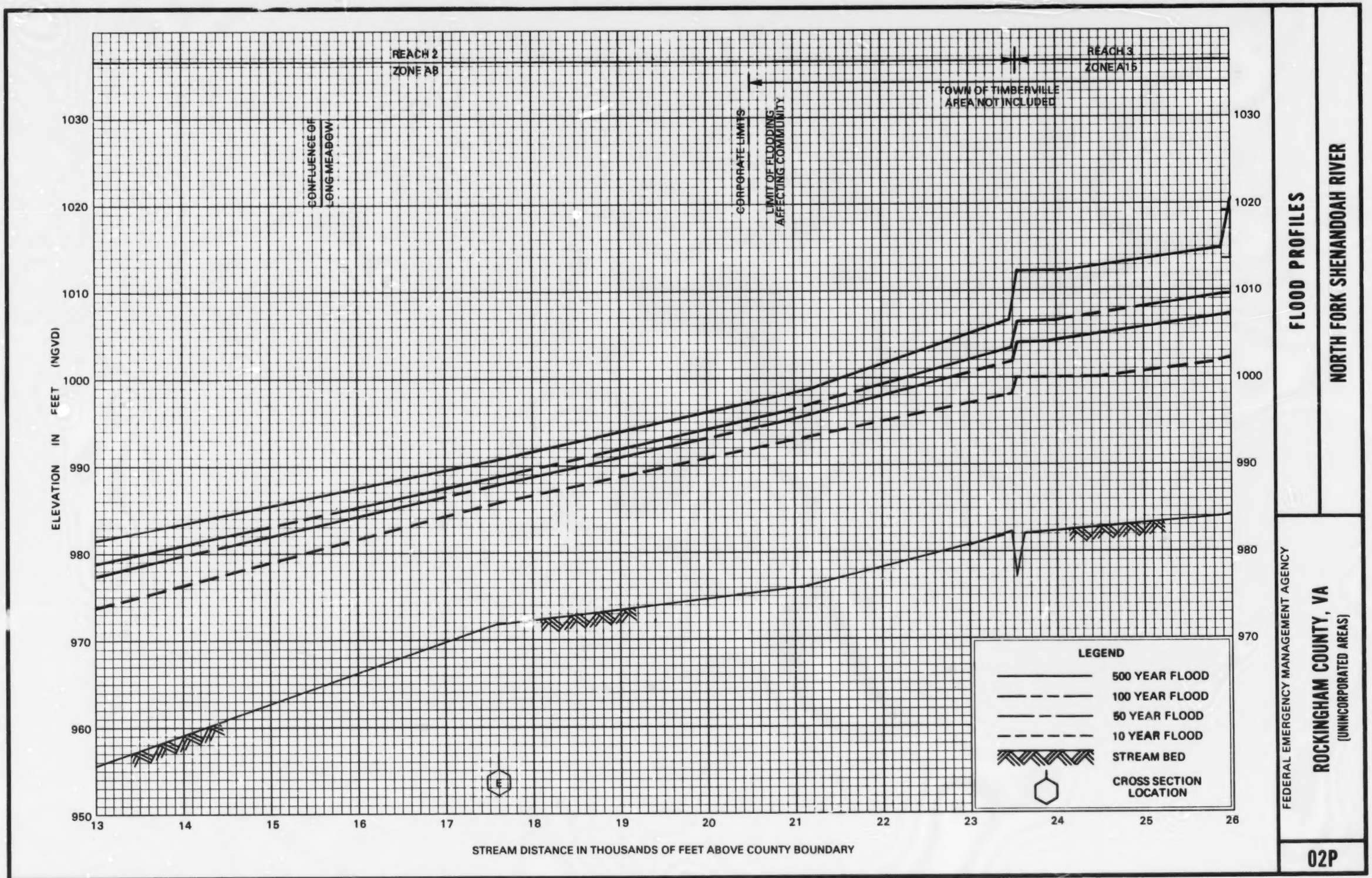

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

02P

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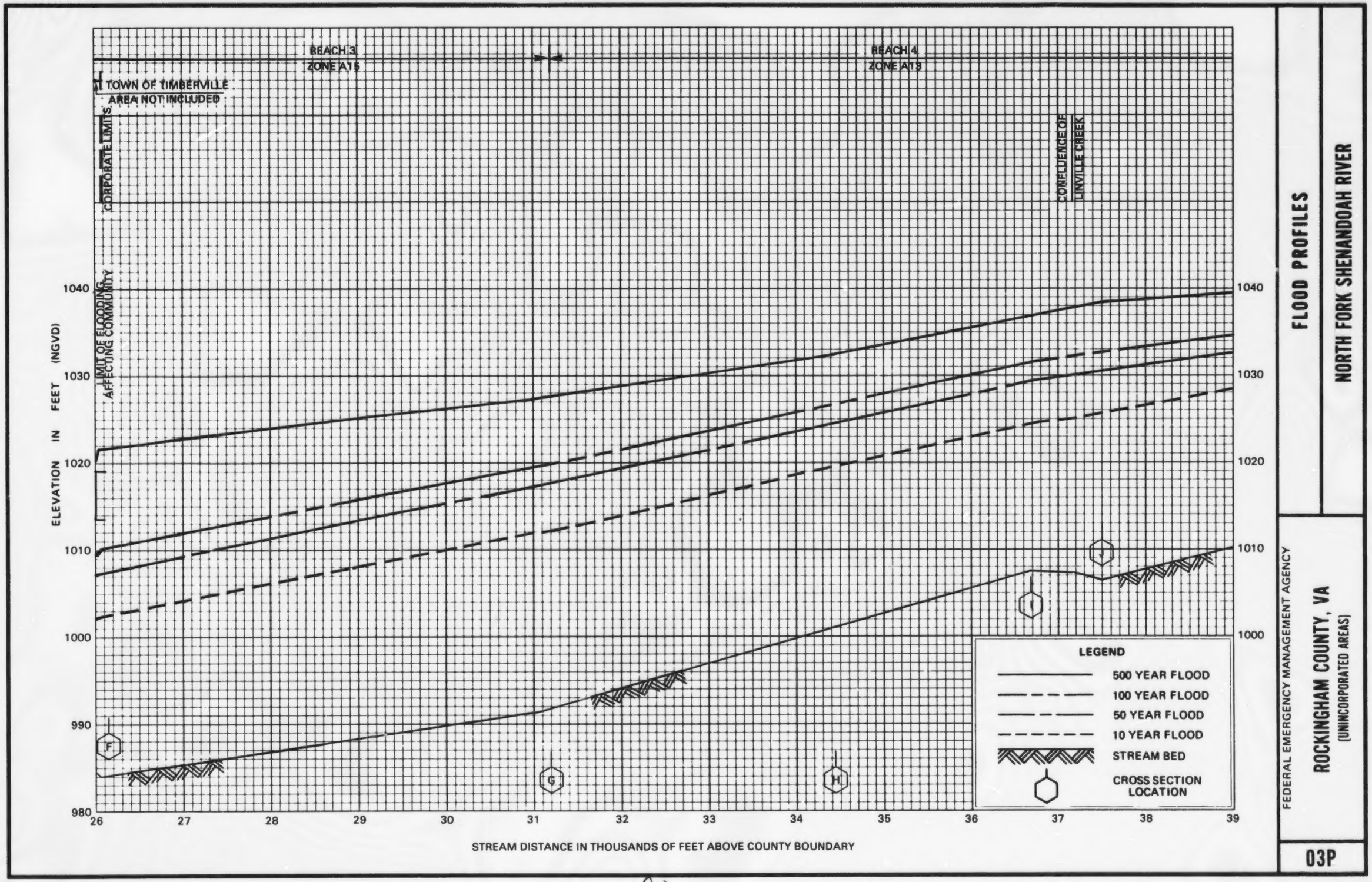

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

03P

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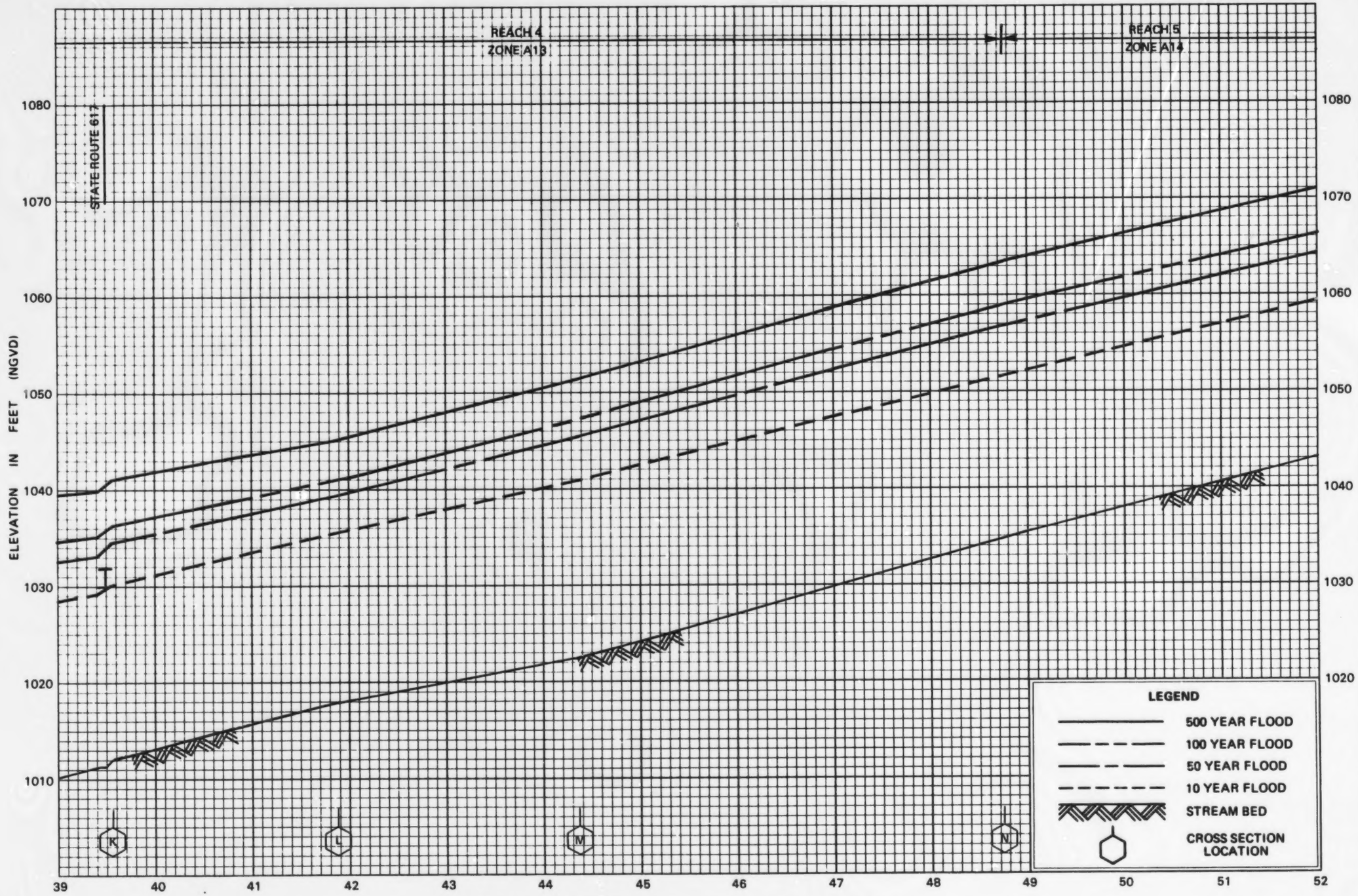

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

04P

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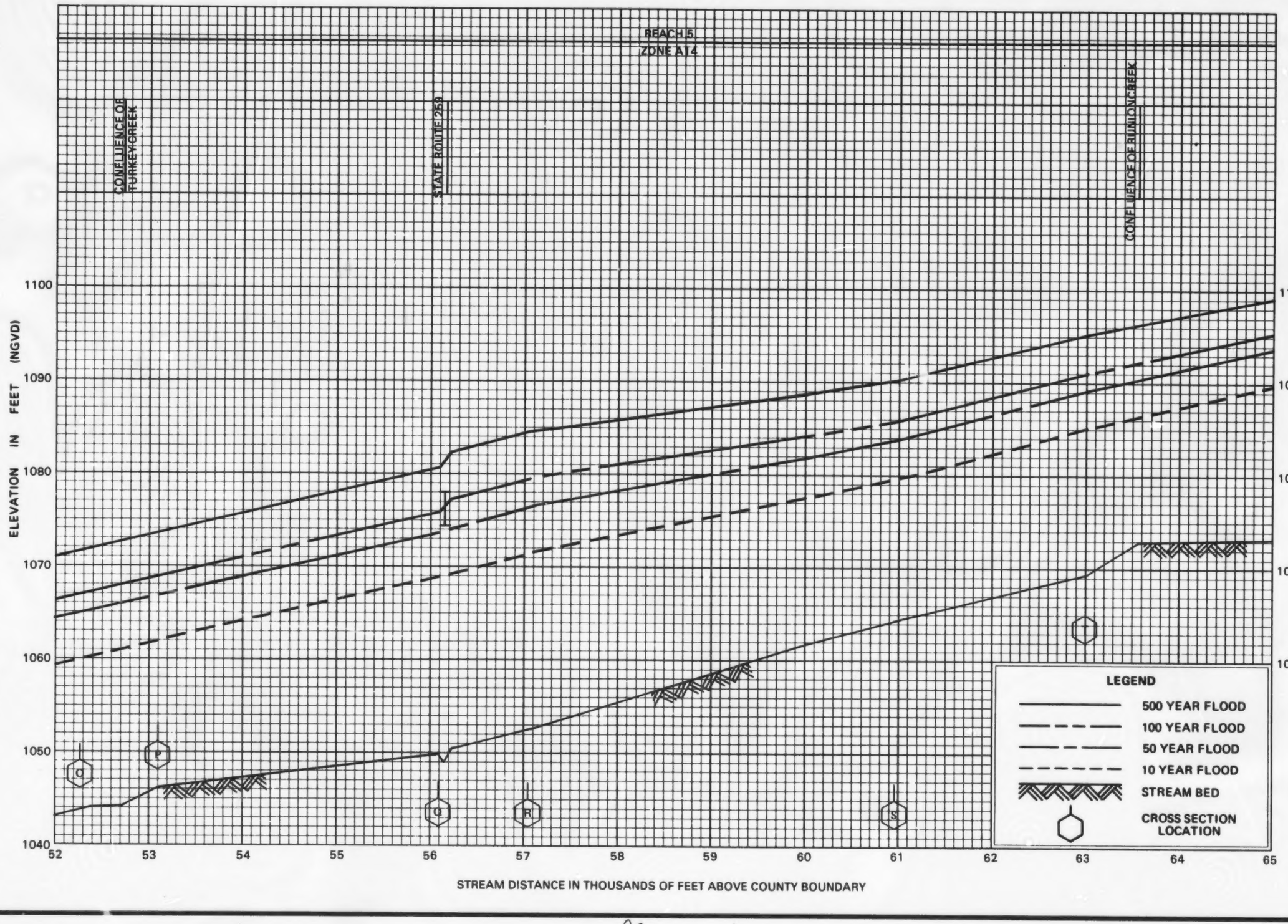

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

05P

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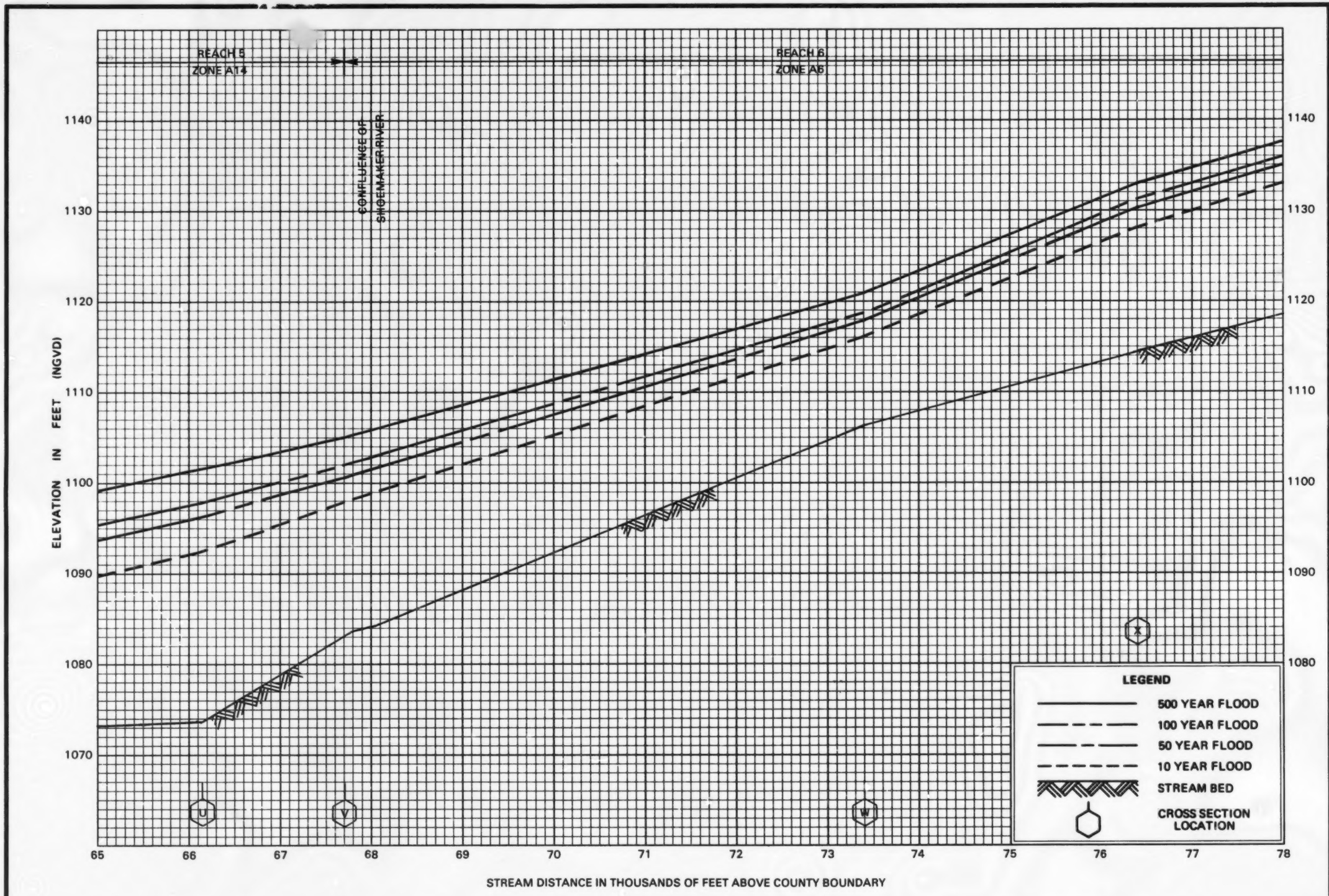

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

06P

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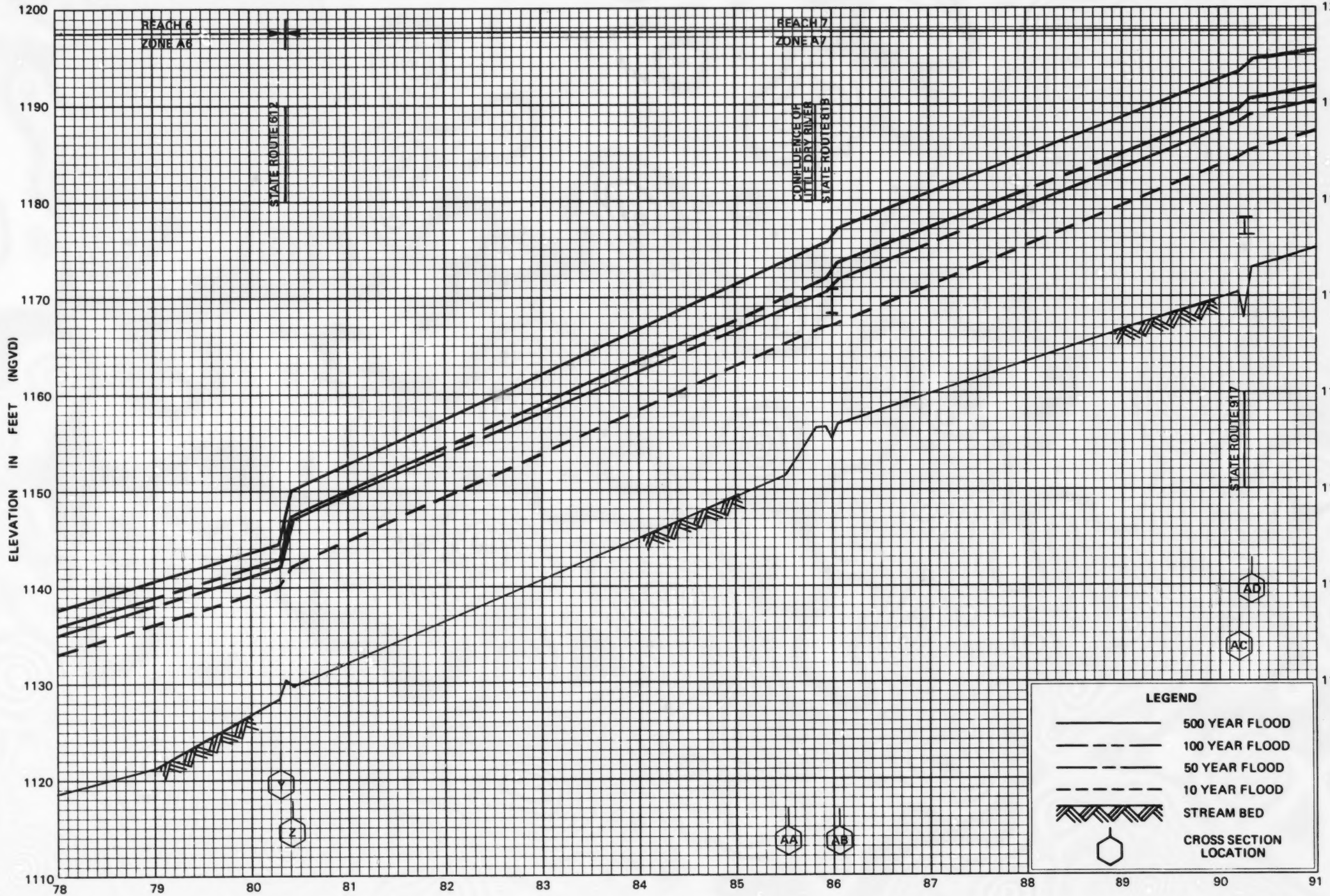

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

07P

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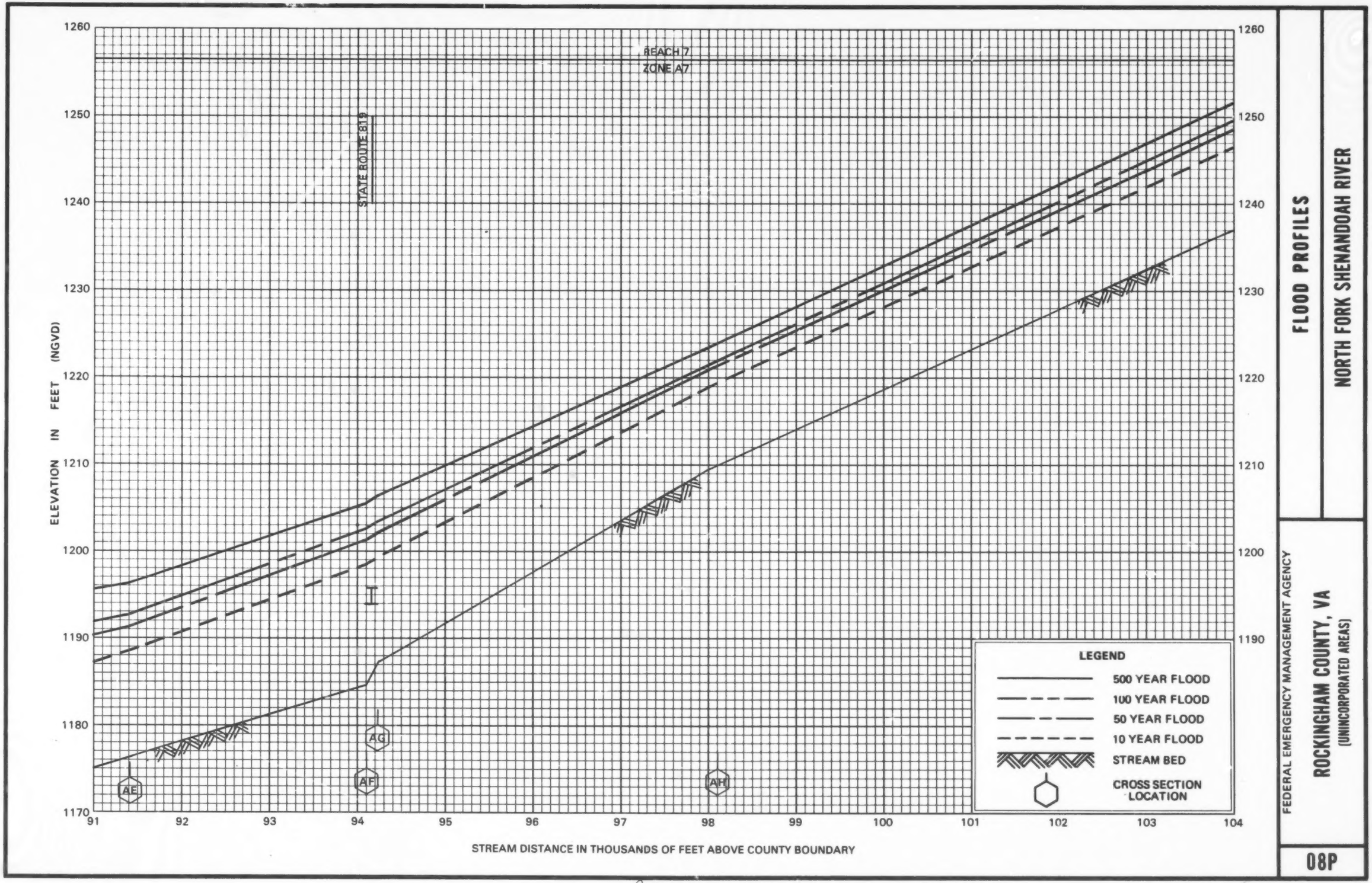

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

08P

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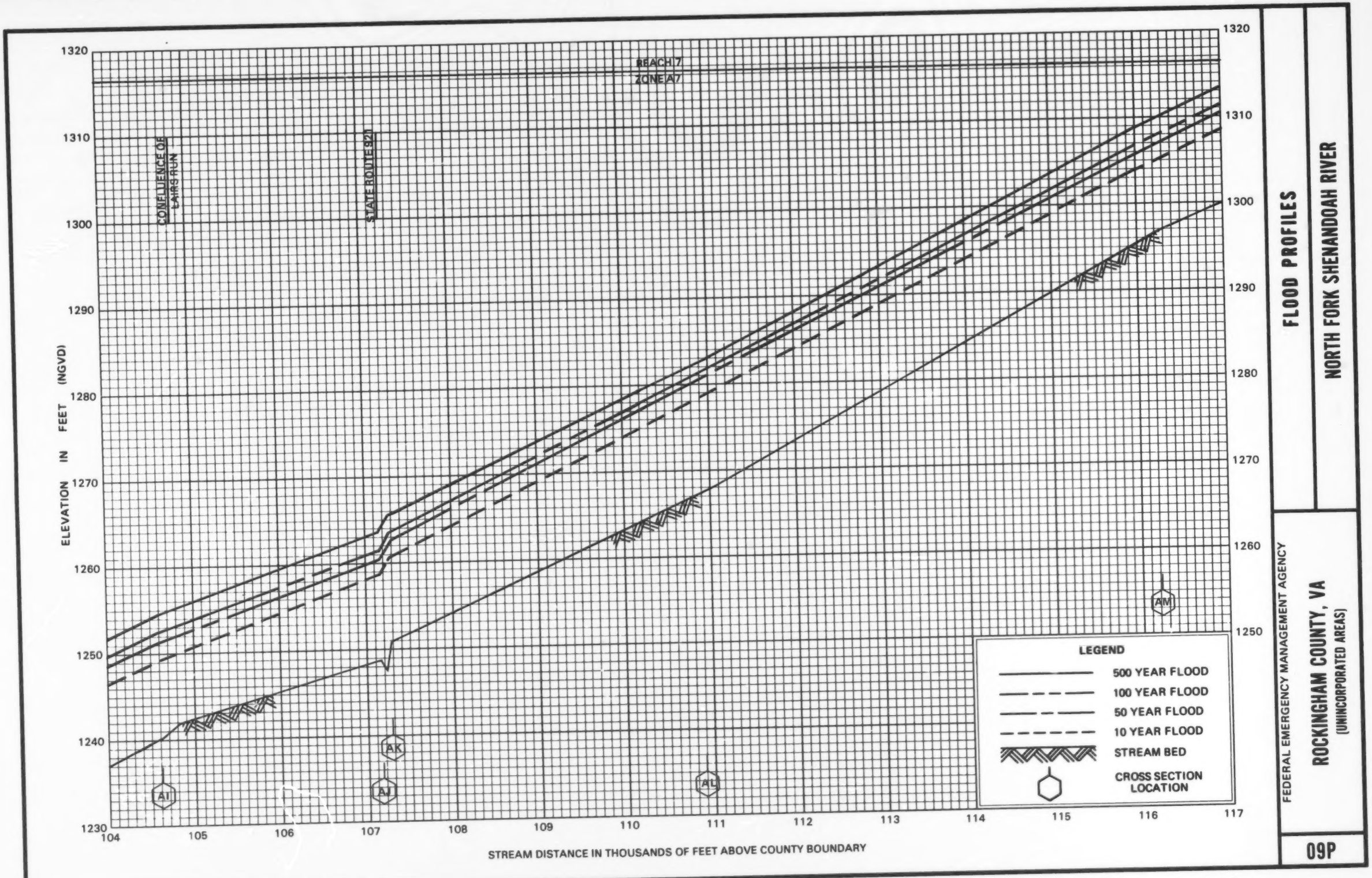

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

09P

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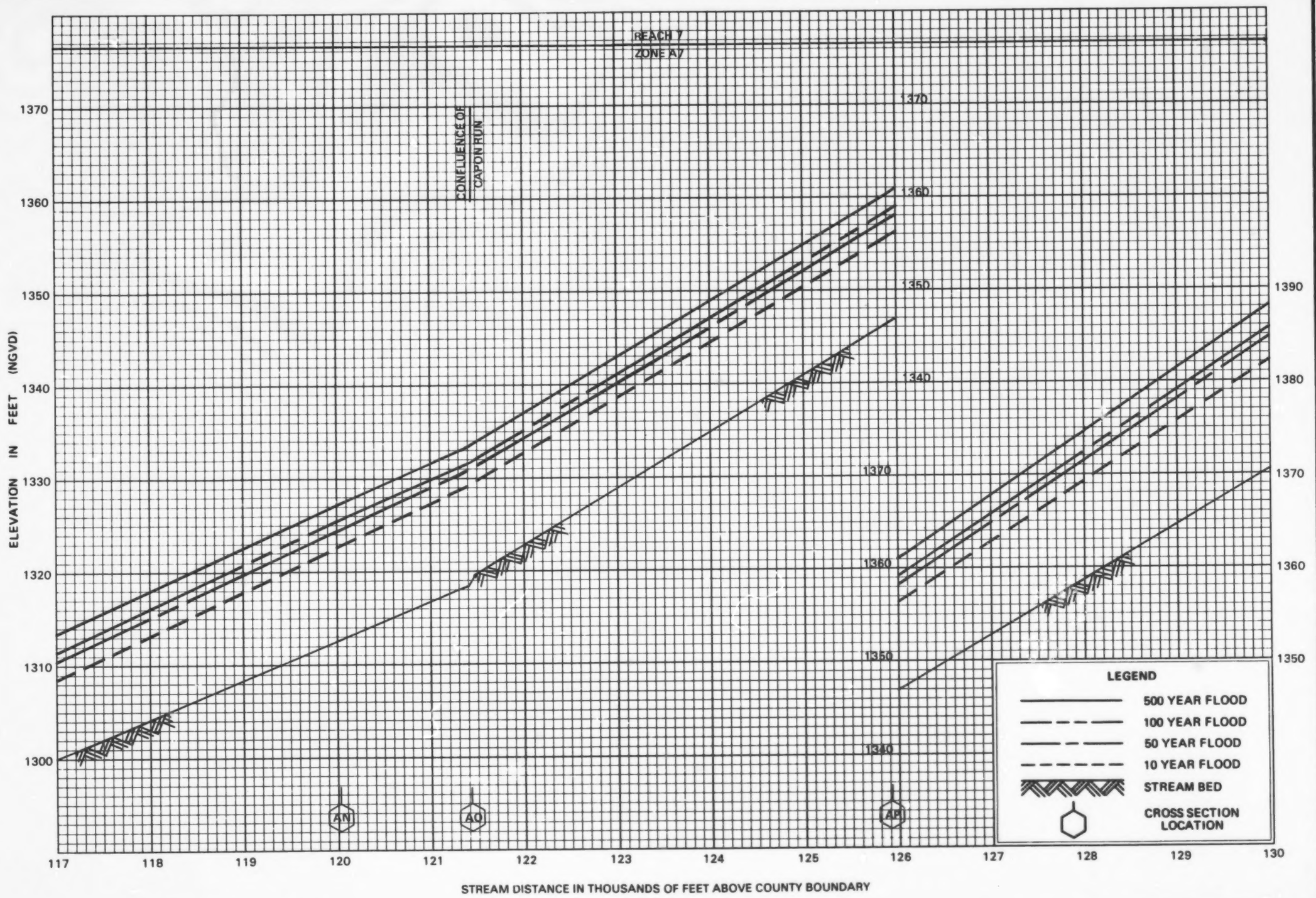

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

10P

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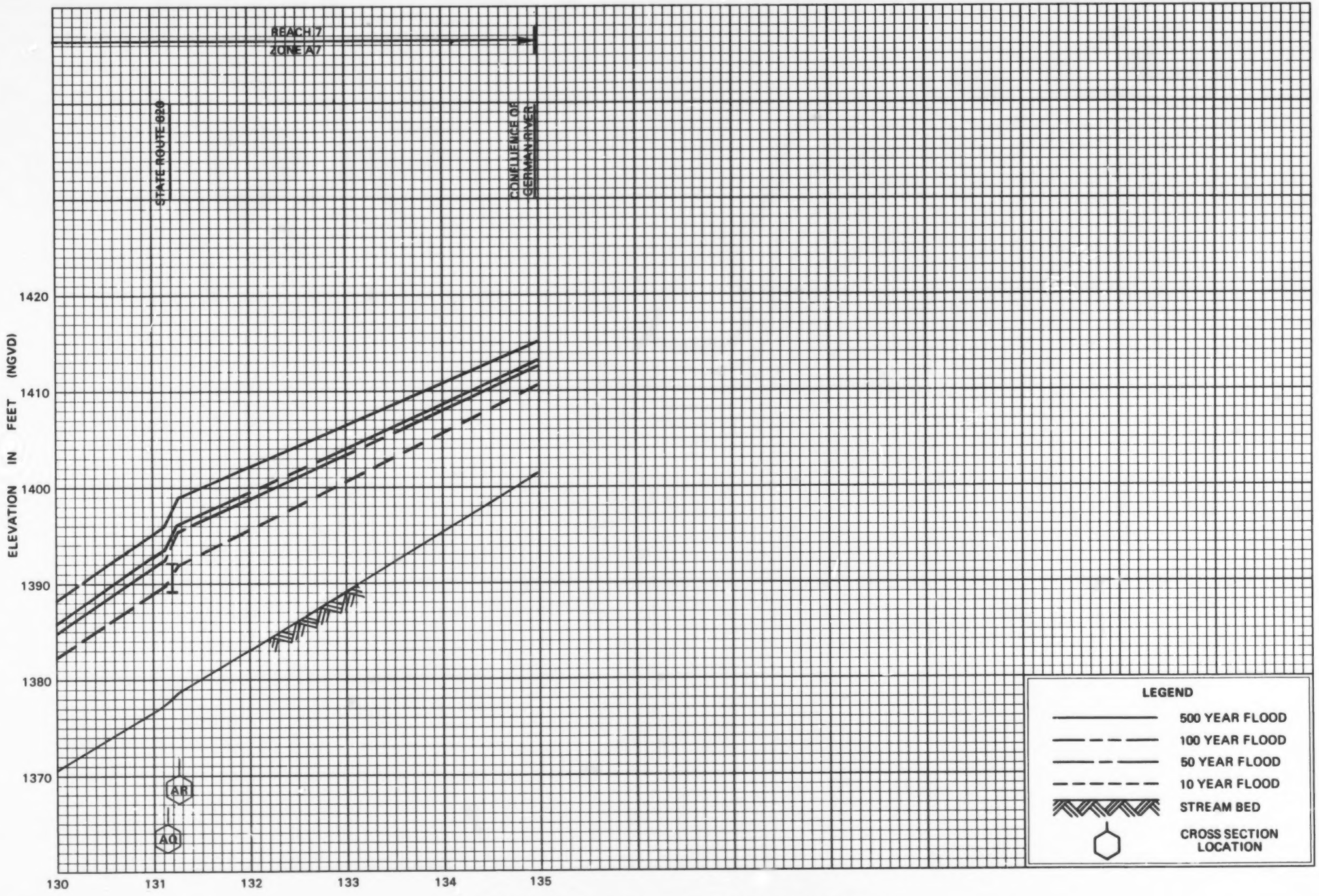

FLOOD PROFILES

NORTH FORK SHENANDOAH RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

11P

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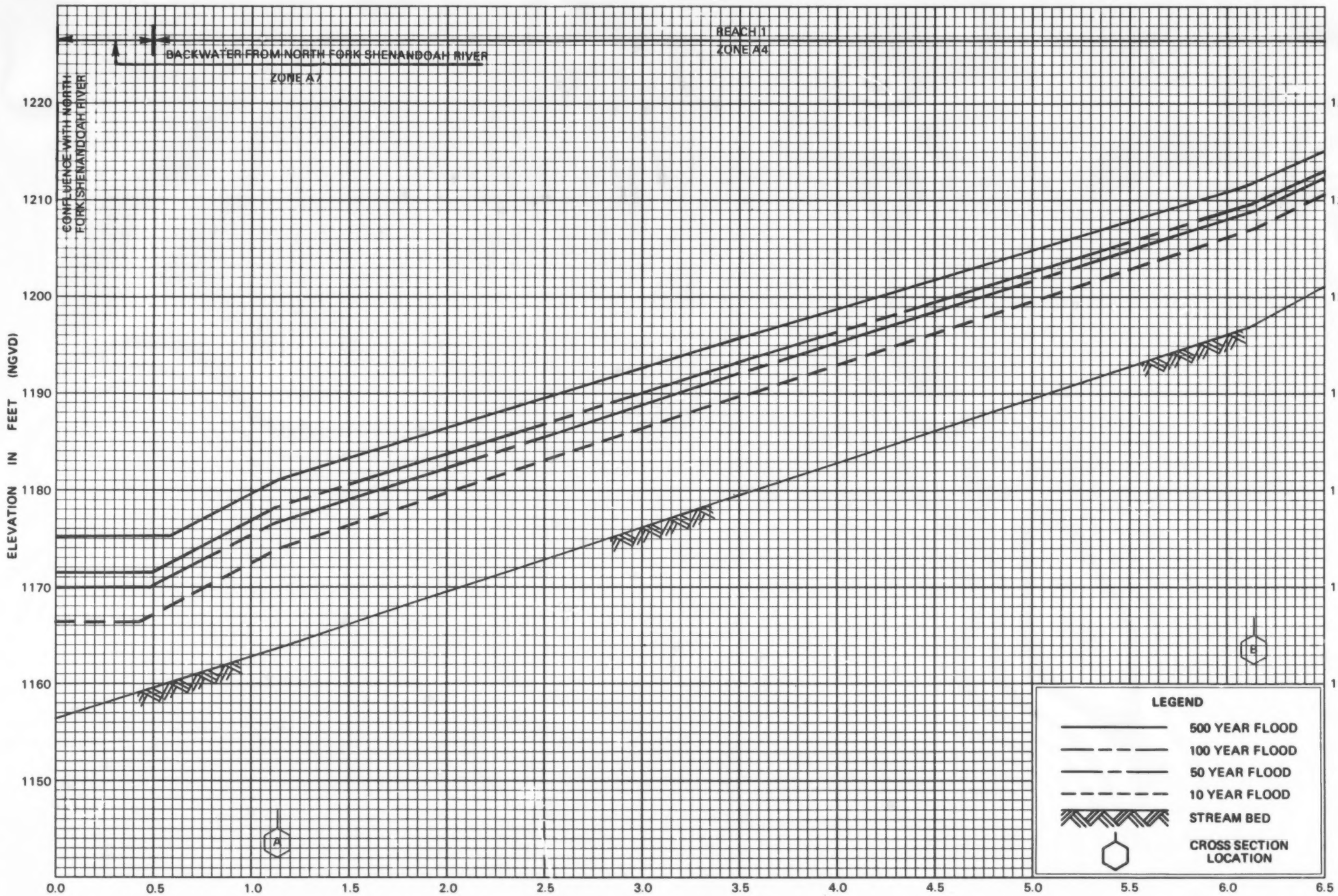

FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

12P

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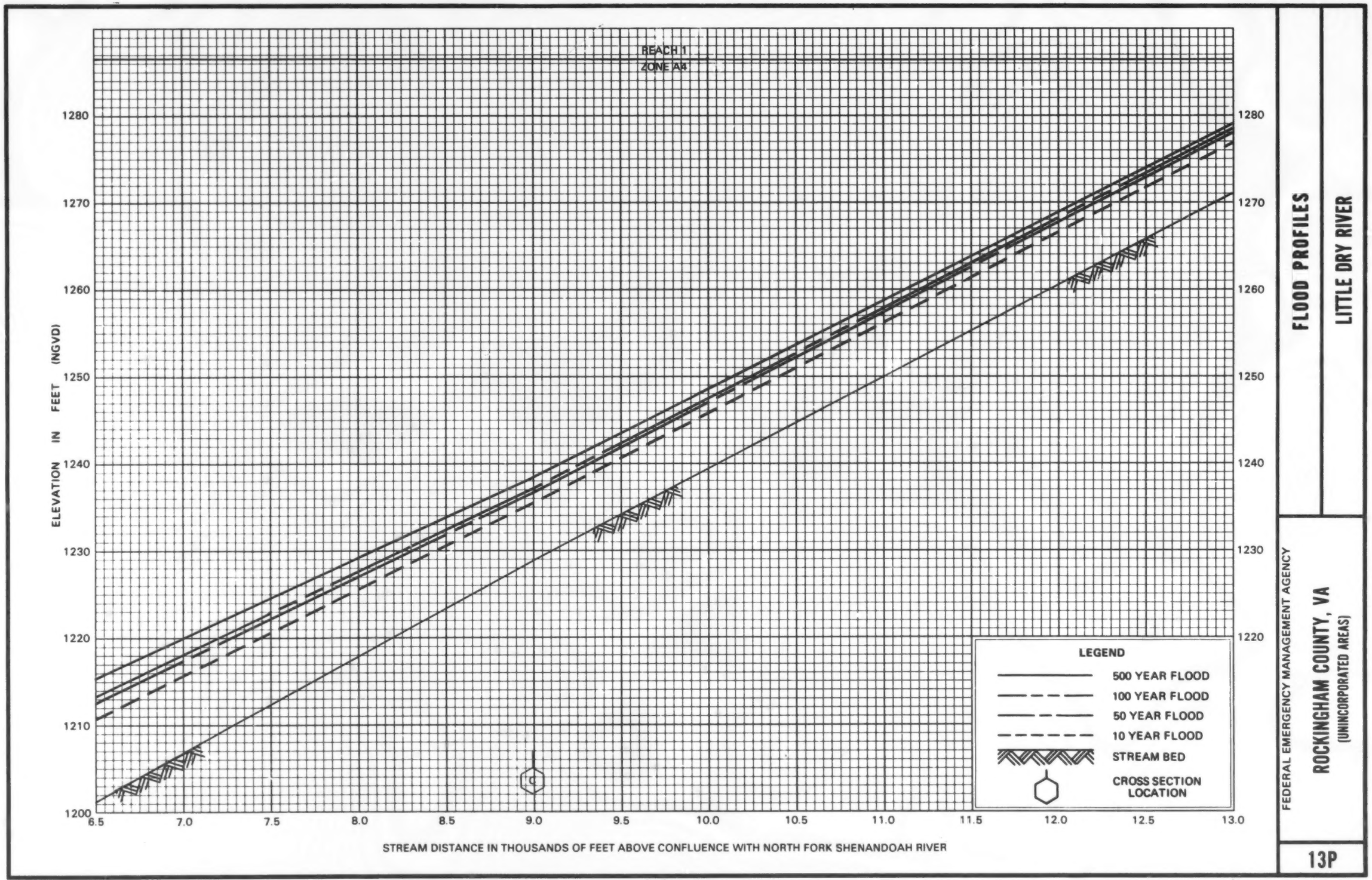

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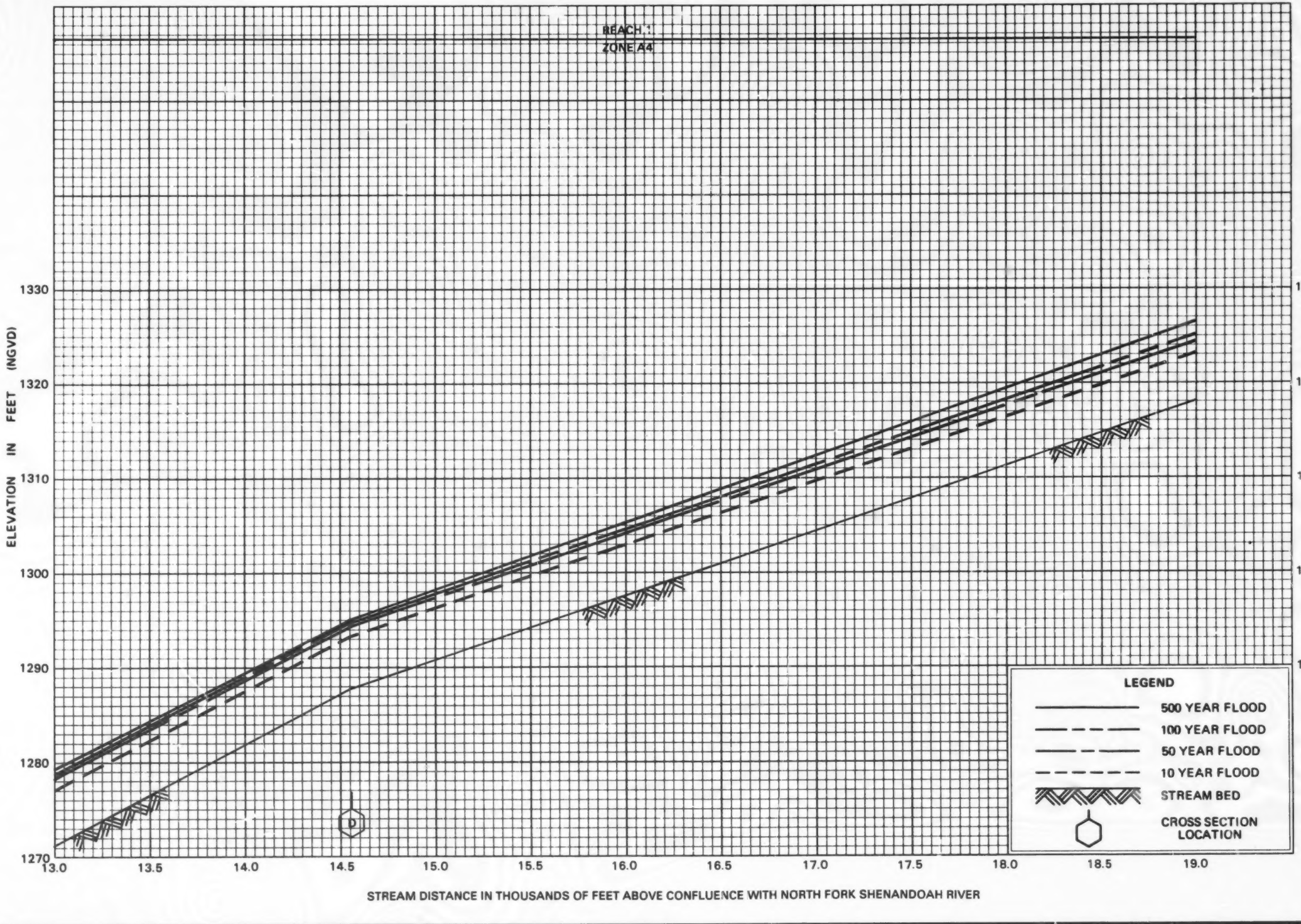

FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

14P

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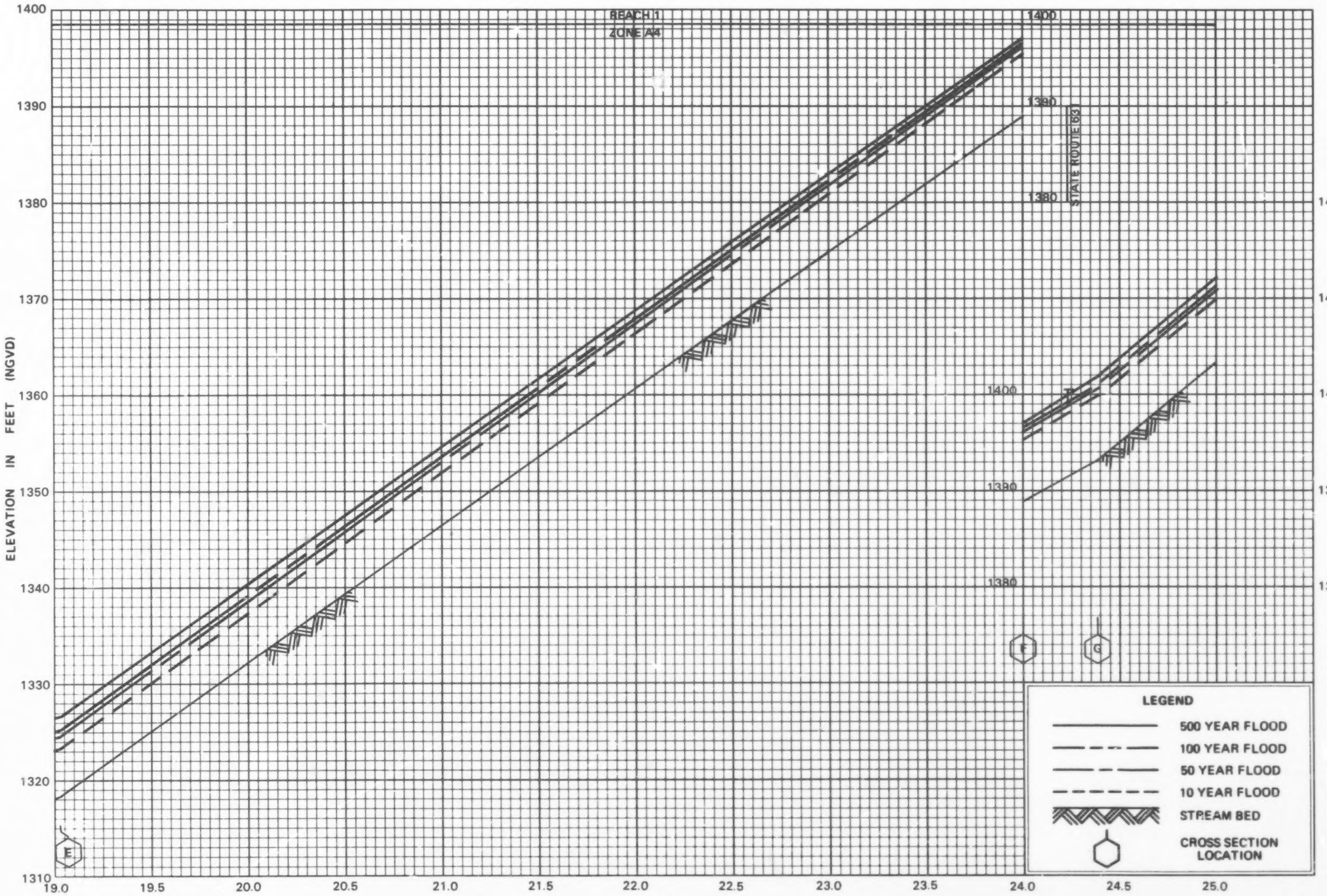

ELEVATION IN FEET (NGVD)

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH NORTH FORK SHENANDOAH RIVER

FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

15P

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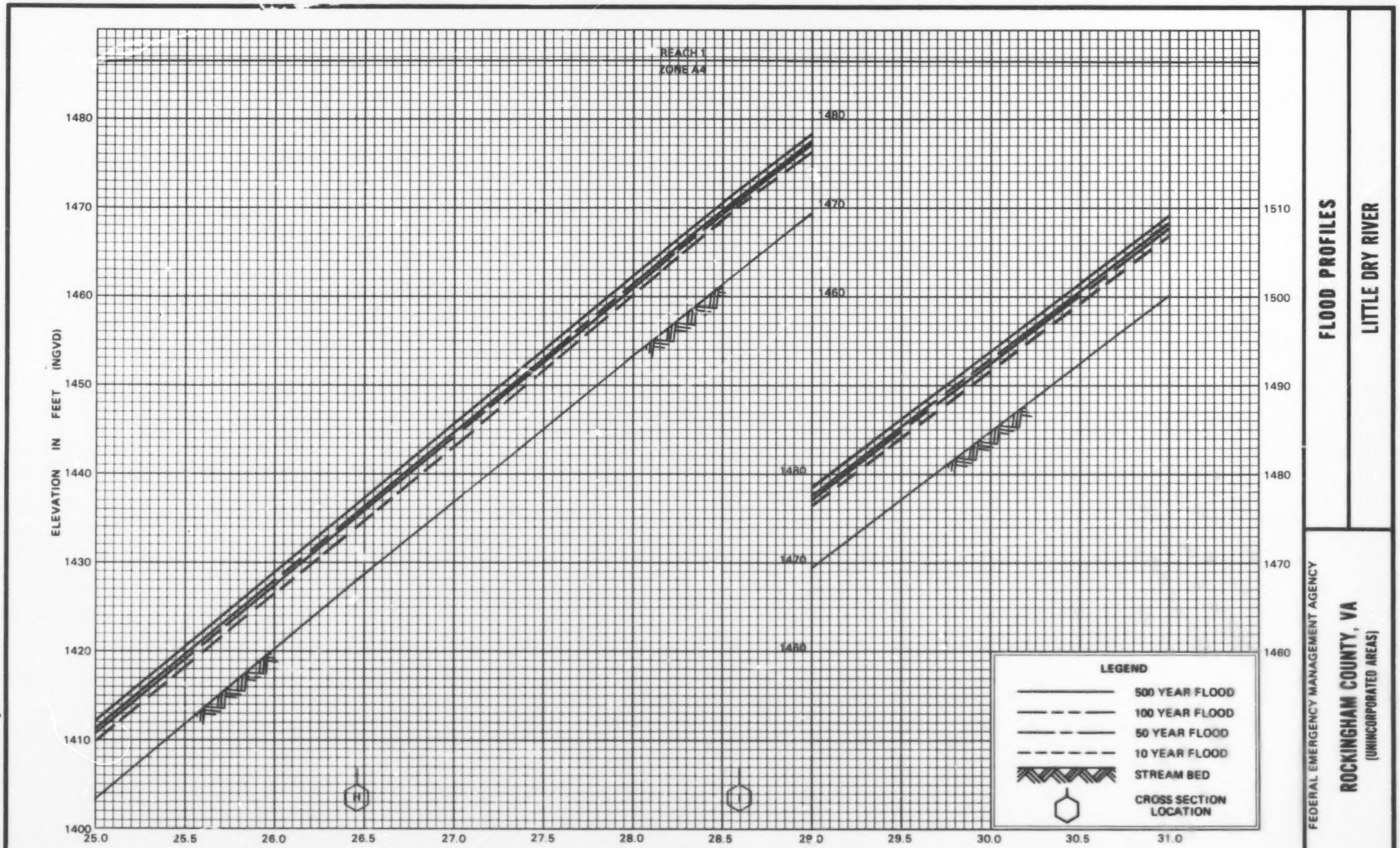

FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

16P

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REACH 1
ZONE A4

ELEVATION IN FEET (NGVD)

1570
1560
1550
1540
1530
1520
1510
1500

1620
1610
1600
1590
1580
1570
1560

OLD ROAD HOLLOW

J

K

LEGEND

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

31.0 31.4 31.8 32.2 32.6 33.0 33.4 33.8 34.2 34.6 35.0 35.4 35.8

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH NORTH FORK SHENANDOAH RIVER

FLOOD PROFILES

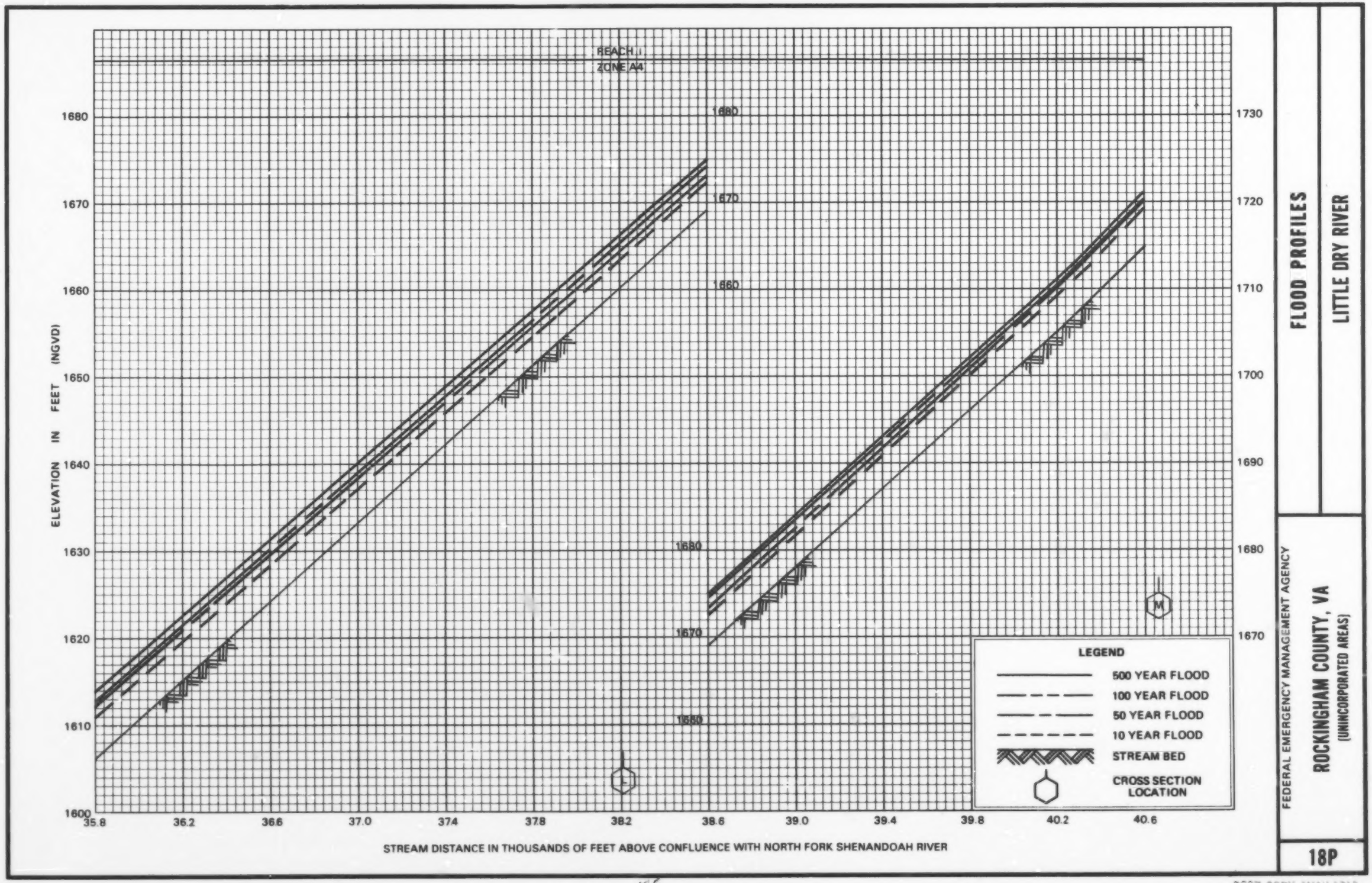
LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

17P

BEST COPY AVAILABLE



FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

18P

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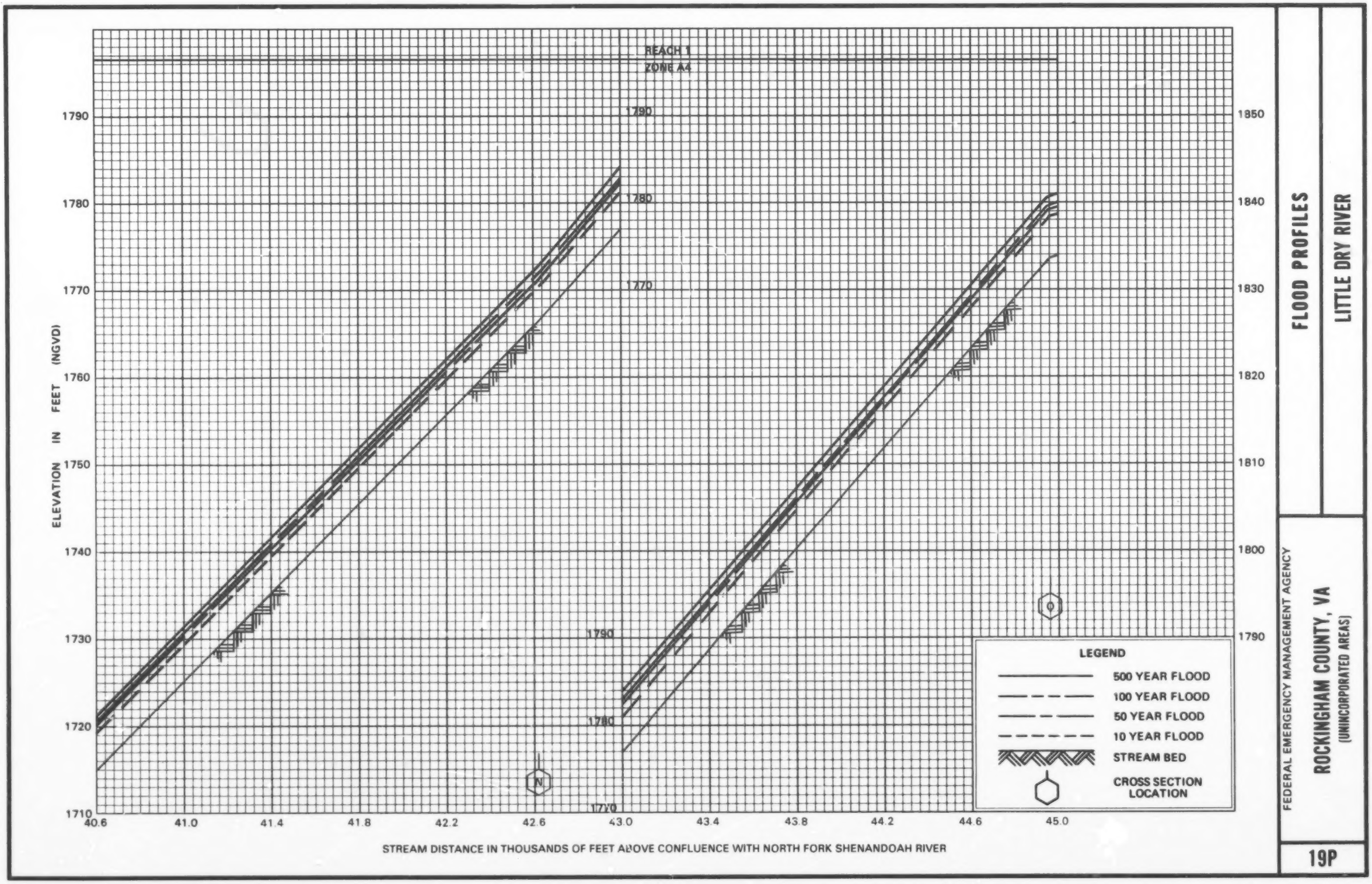

FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

19P

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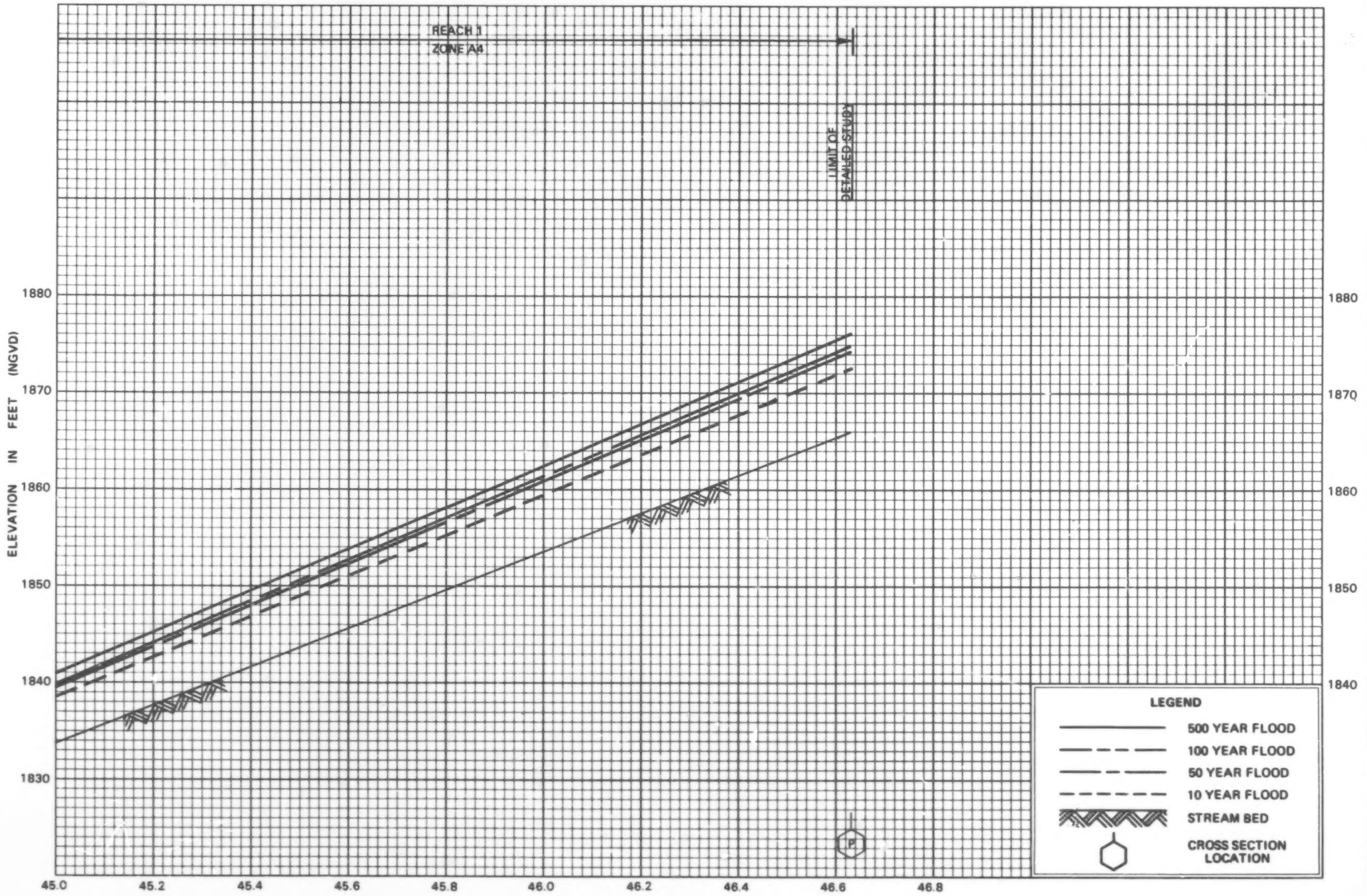

FLOOD PROFILES

LITTLE DRY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

20P

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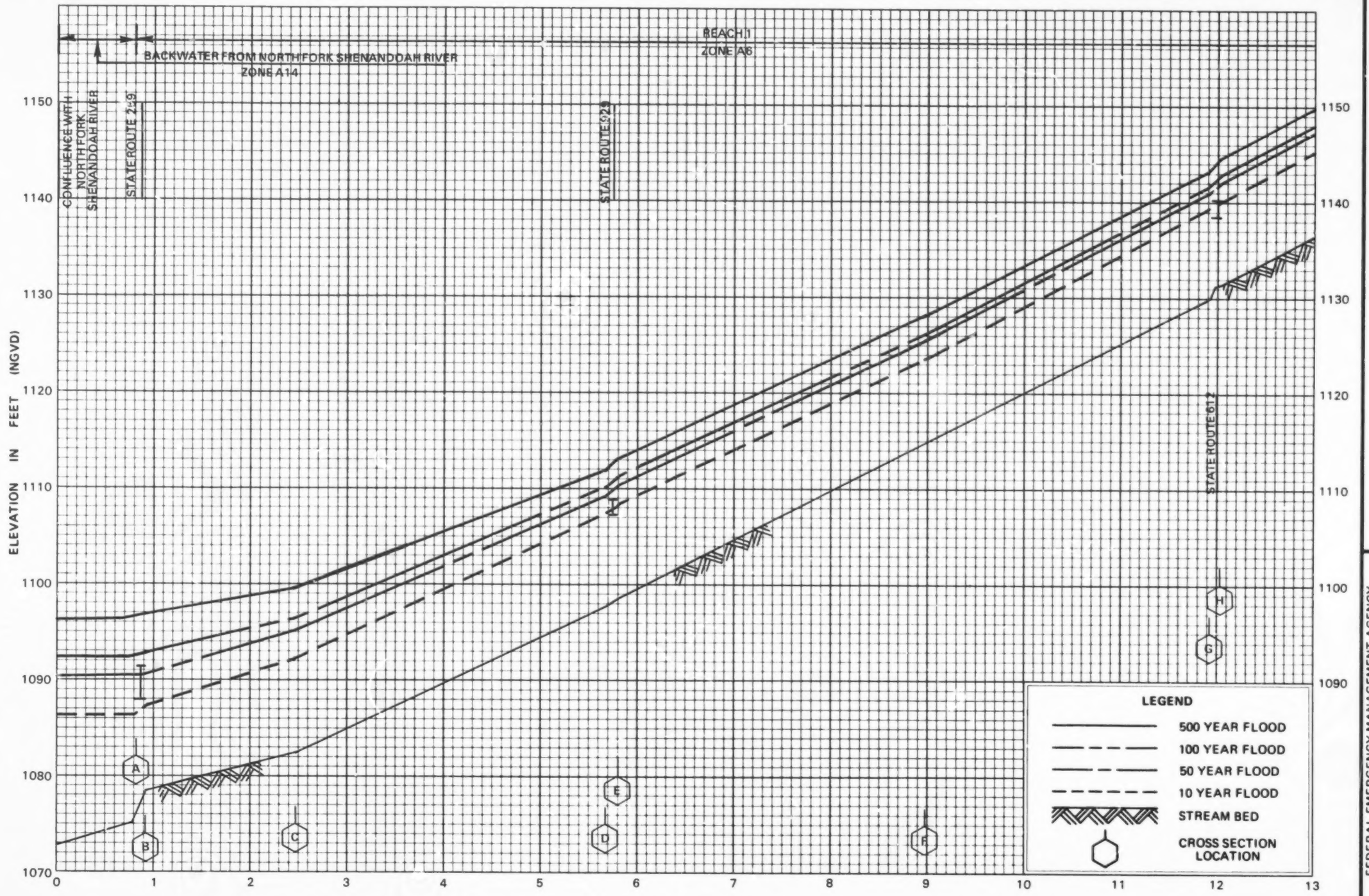

FLOOD PROFILES

RUNION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

21P

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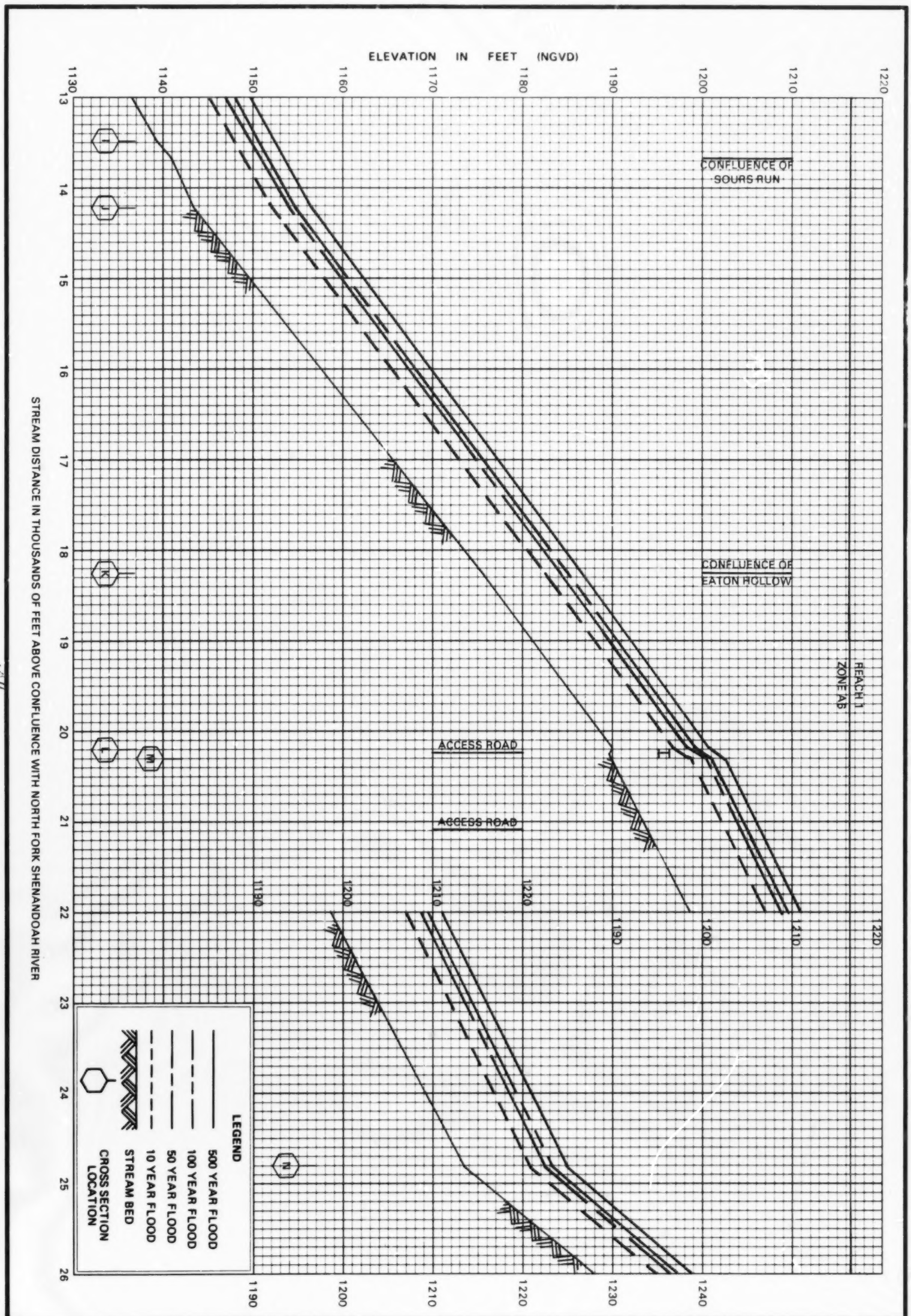


FEDERAL EMERGENCY MANAGEMENT AGENCY

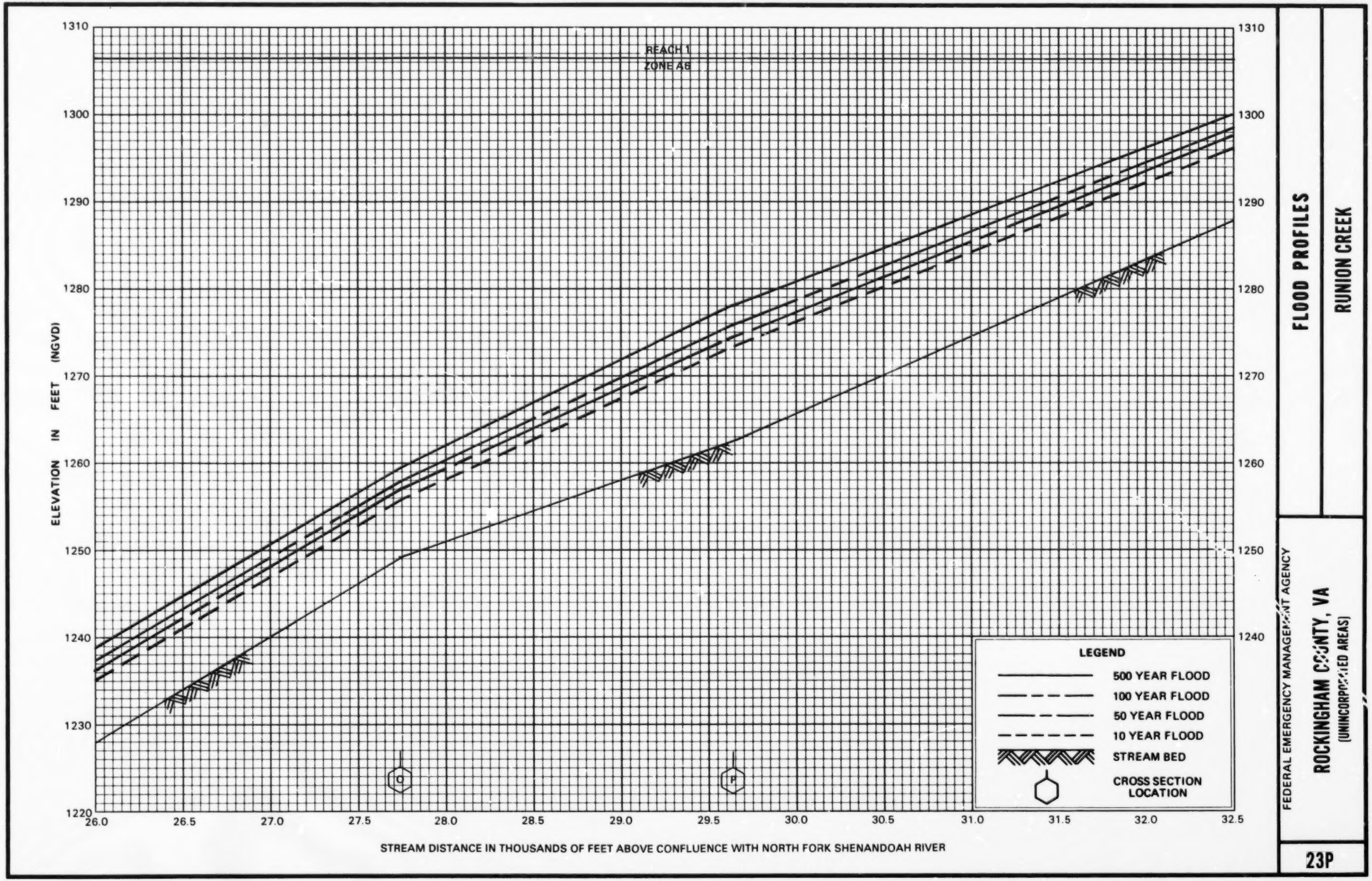
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD PROFILES

RUNION CREEK

22P

BEST COPY AVAILABLE



FLOOD PROFILES

RUNION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

23P

BEST COPY AVAILABLE

REACH 1
ZONE AB

ELEVATION IN FEET (NGVD)

1360
1350
1340
1330
1320
1310
1300
1290
1280

32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0 36.5 37.0 37.5 38.0 38.5 39.0

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH NORTH FORK SHENANDOAH RIVER

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

RUNION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

24P

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REACH 1
ZONE A6

LIMIT OF DETAILED STUDY

ELEVATION IN FEET (NGVD)

1410
1400
1390
1380
1370
1360
1350
1340

39.0 39.5 40.0 40.5 41.0 41.5 42.0 42.5 43.0 43.5 44.0

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH NORTH FORK SHENANDOAH RIVER

S

T

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

RUNION CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

25P

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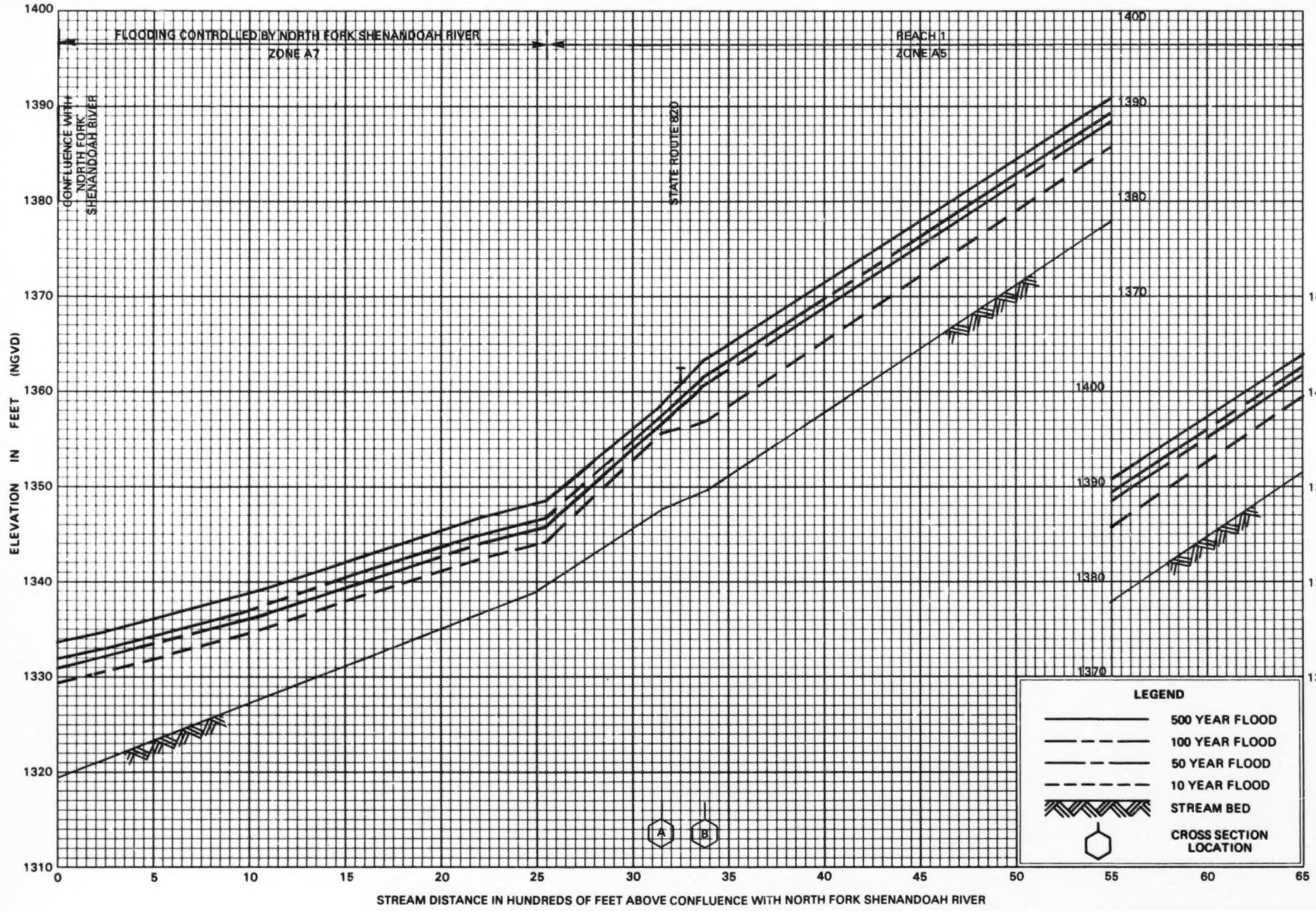

FLOOD PROFILES

CAPON RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

26P

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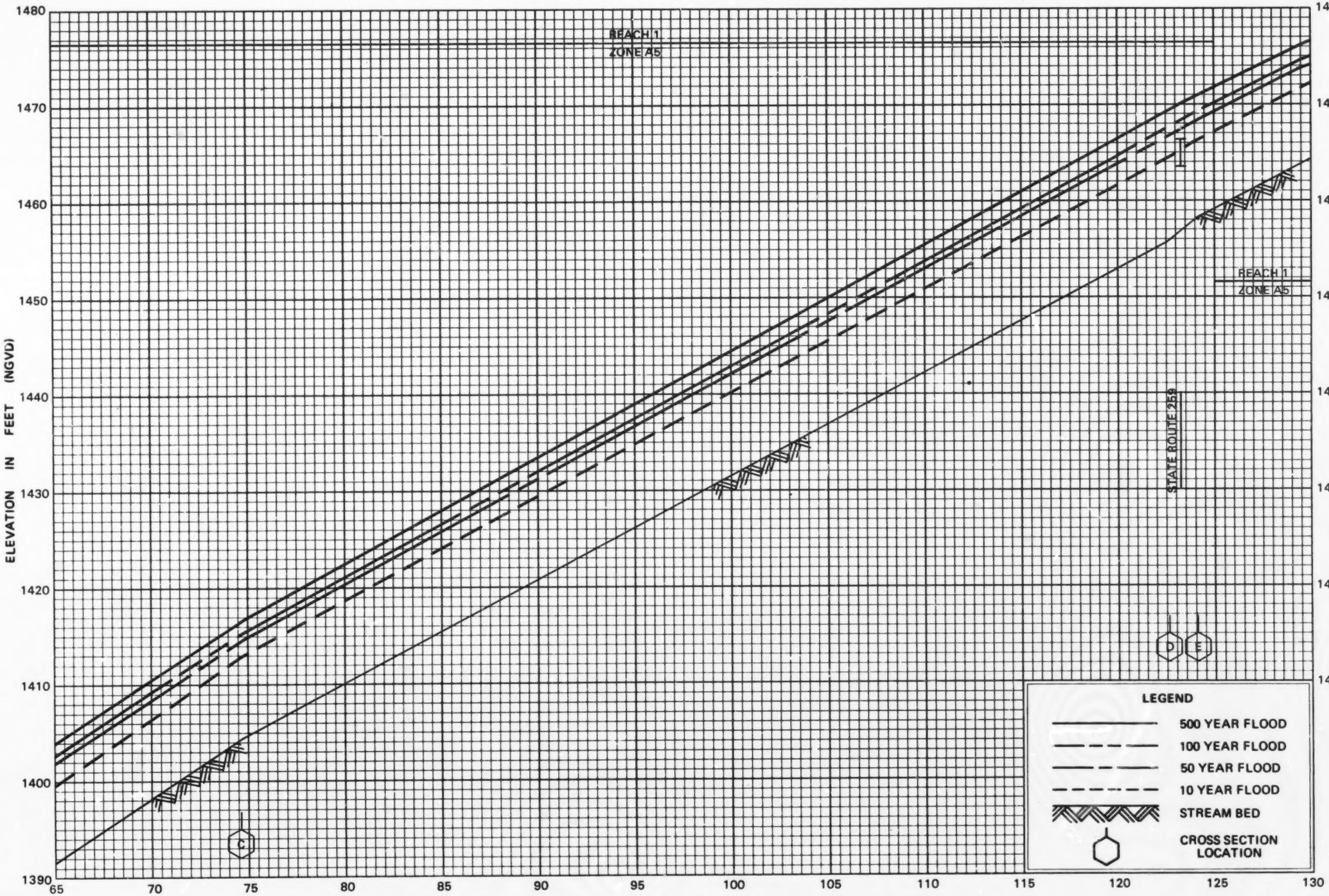


FLOOD PROFILES

CAPON RUN

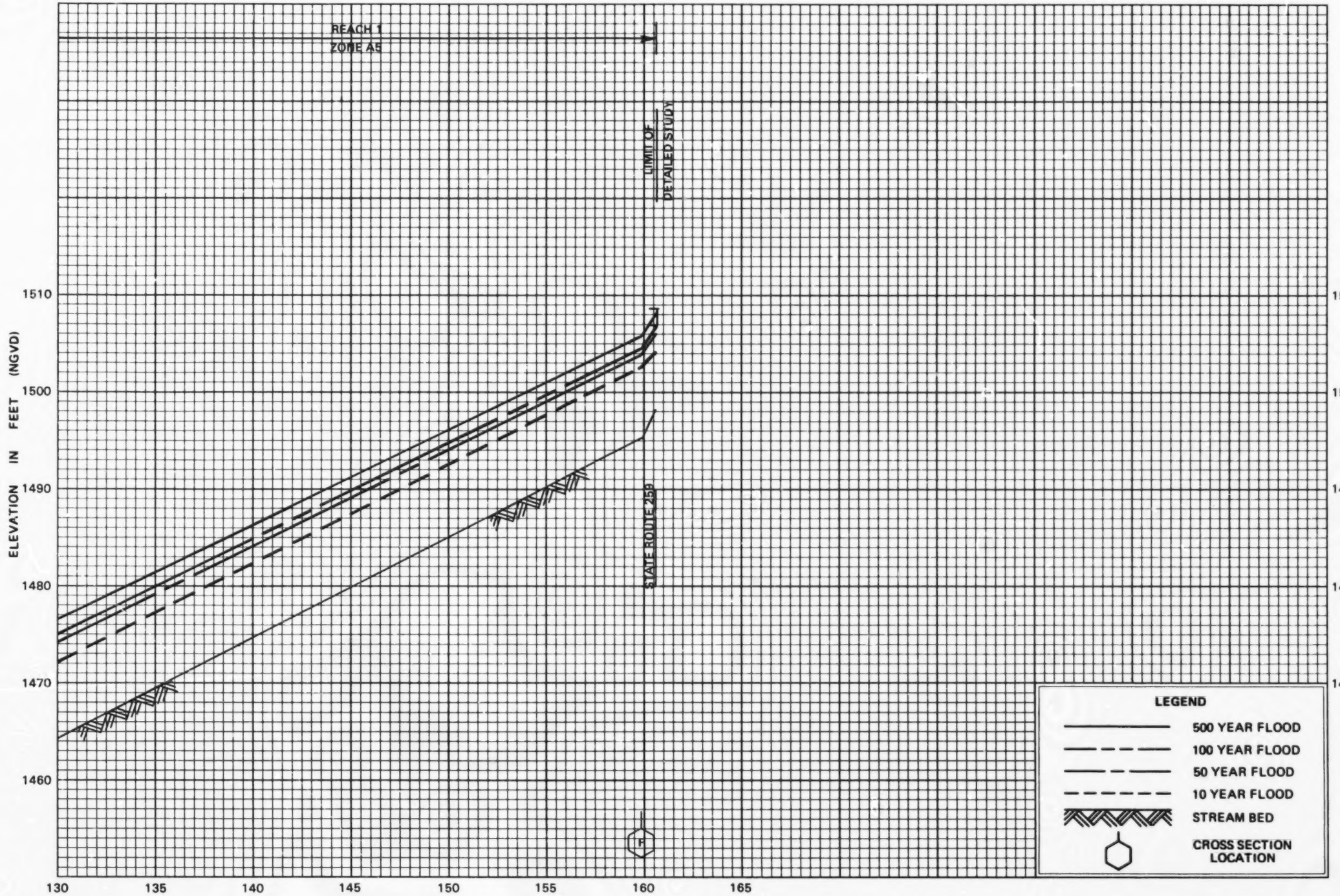
FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

27P

BEST COPY AVAILABLE



FLOOD PROFILES

CAPON RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

28P

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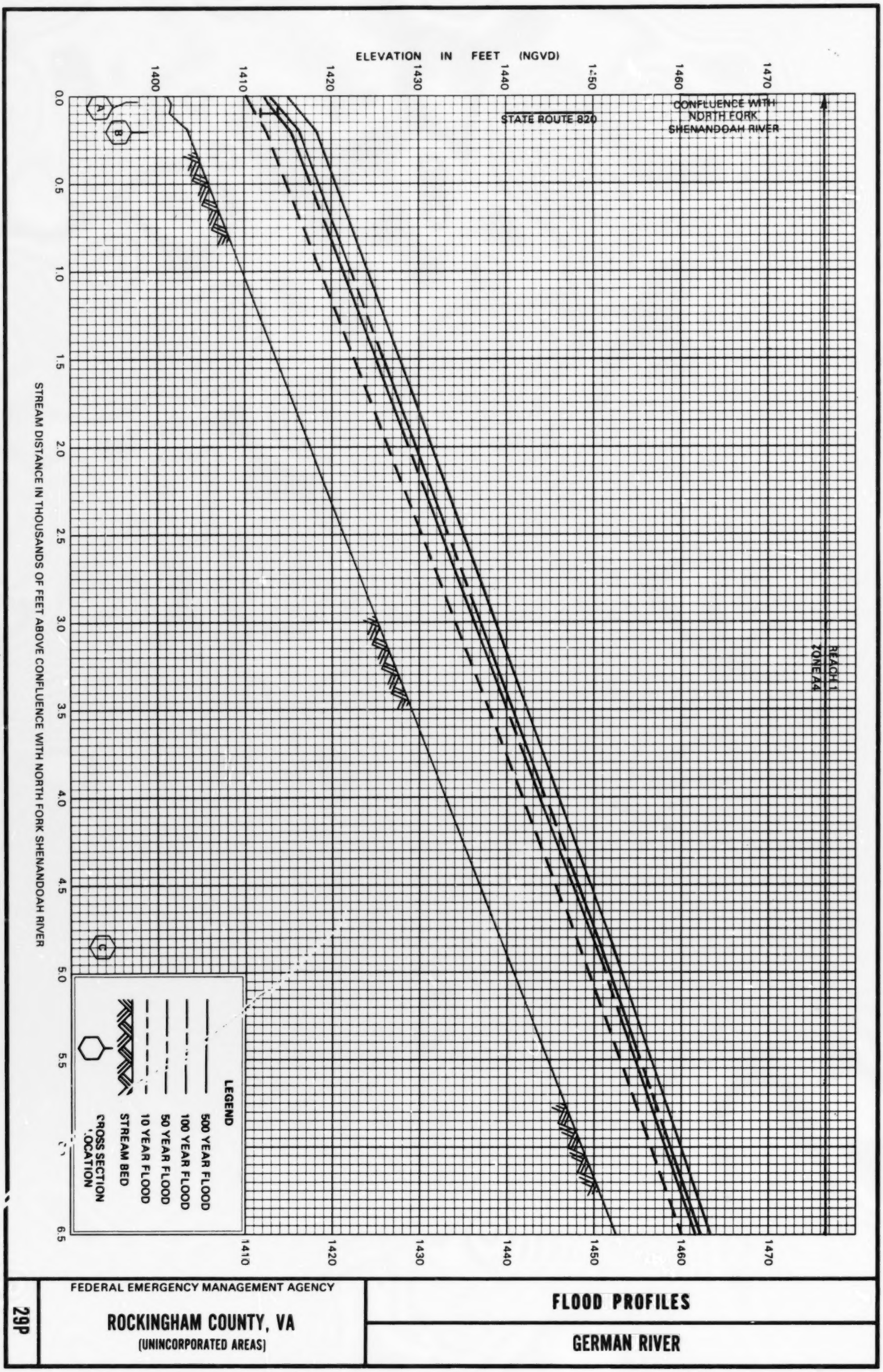


FEDERAL EMERGENCY MANAGEMENT AGENCY

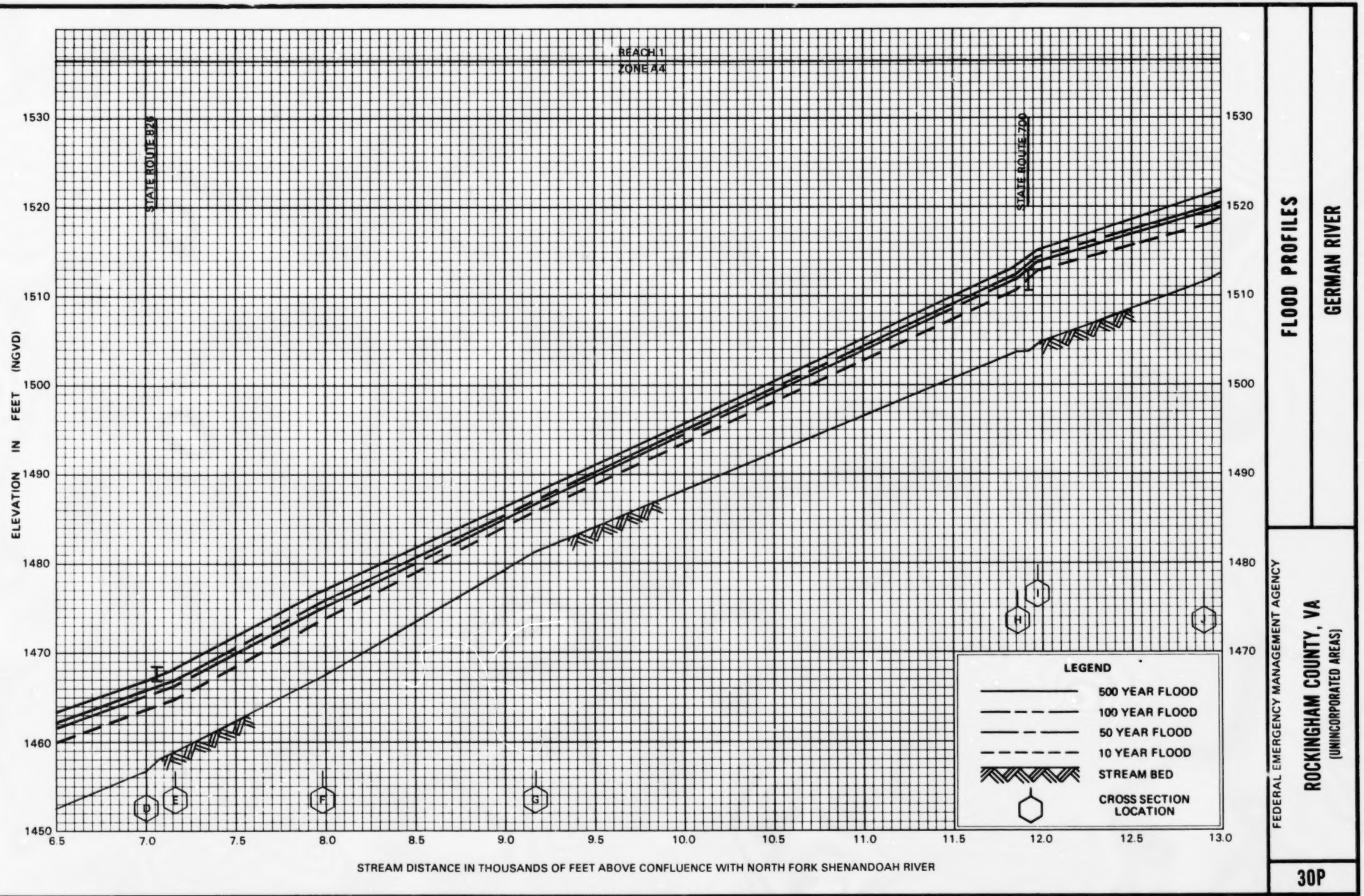
ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

FLOOD PROFILES

GERMAN RIVER

29P

BEST COPY AVAILABLE



FLOOD PROFILES

GERMAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

30P

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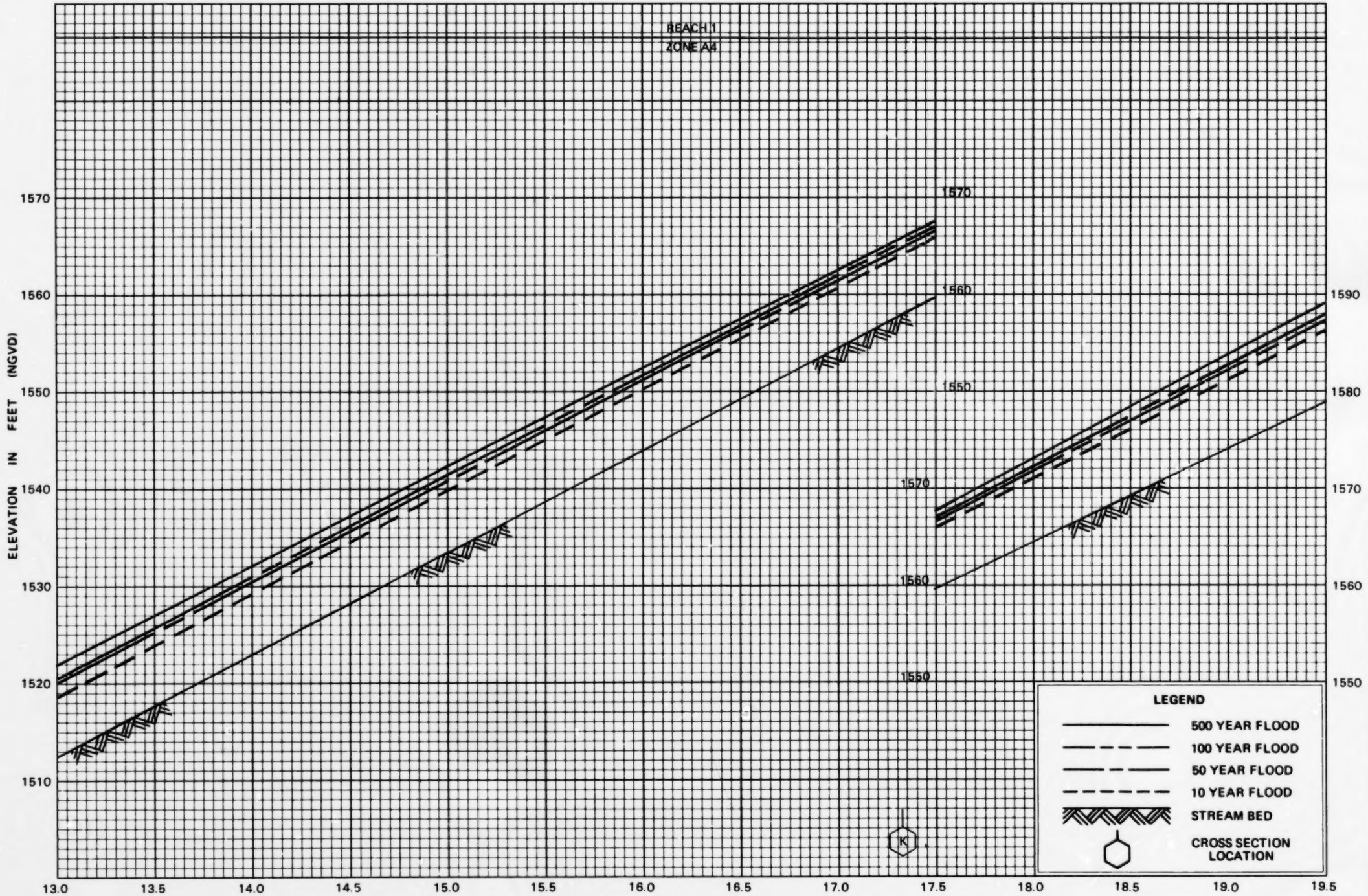

FLOOD PROFILES

GERMAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

31P

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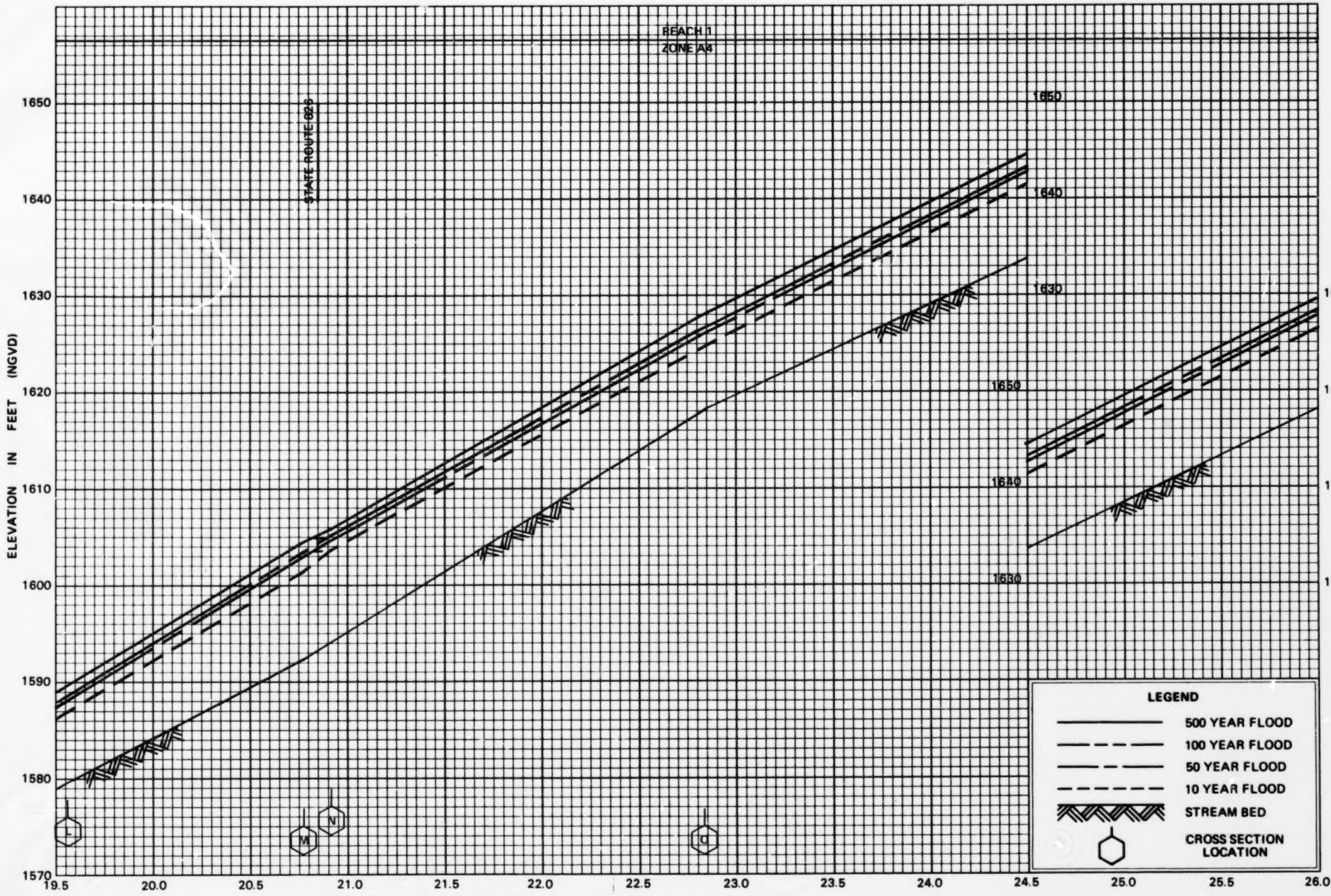

FLOOD PROFILES

GERMAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

32P

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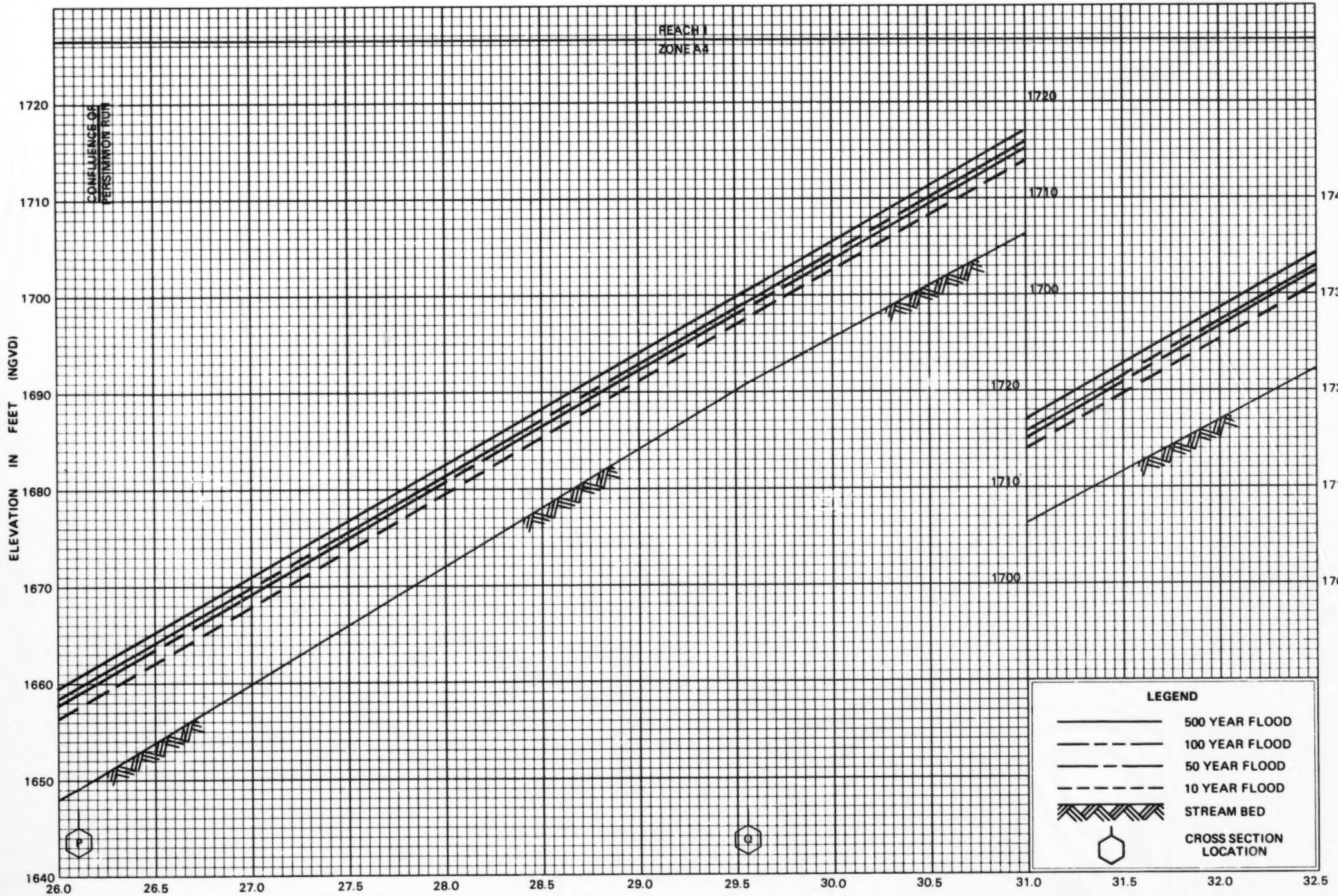

FLOOD PROFILES

GERMAN RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

33P

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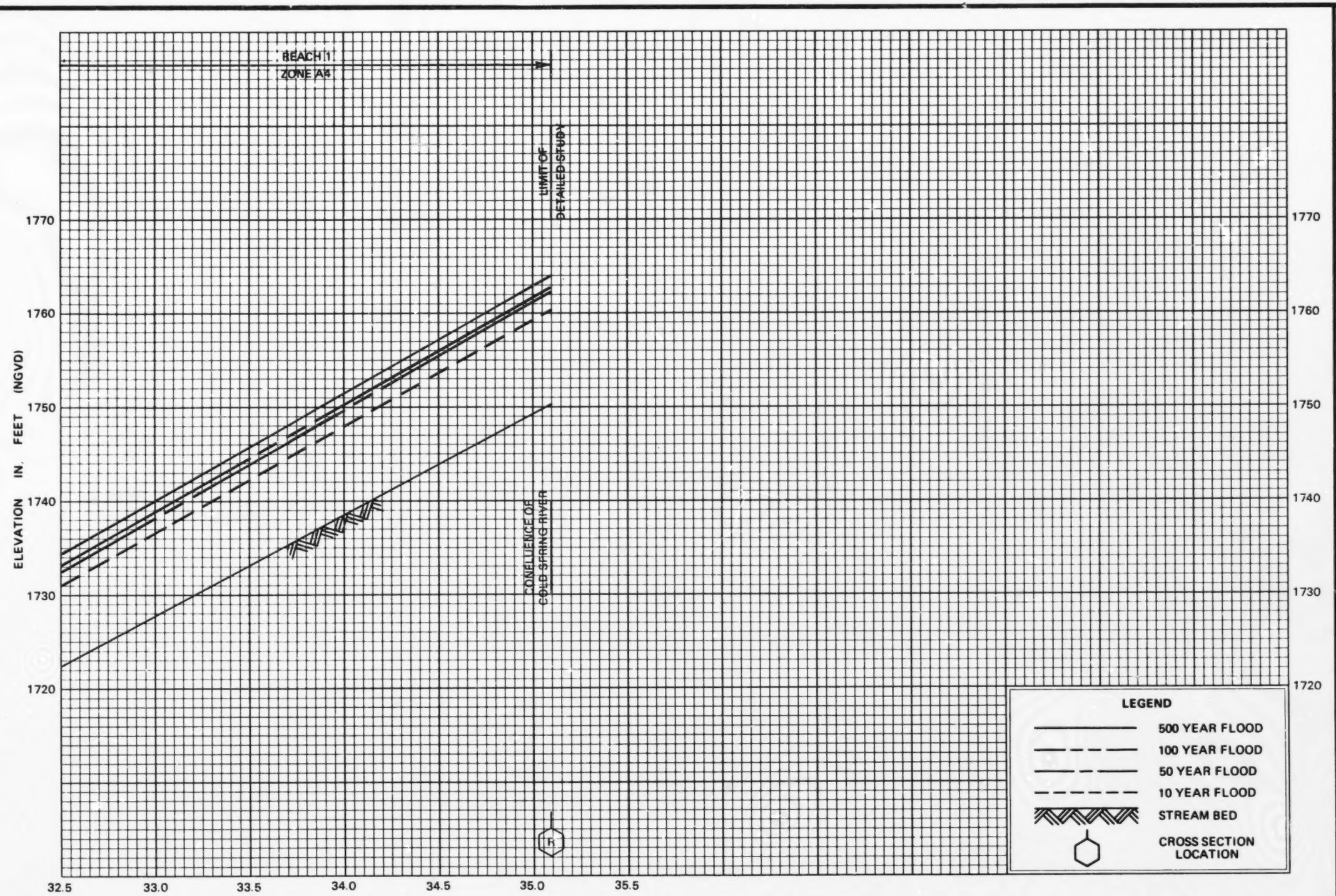

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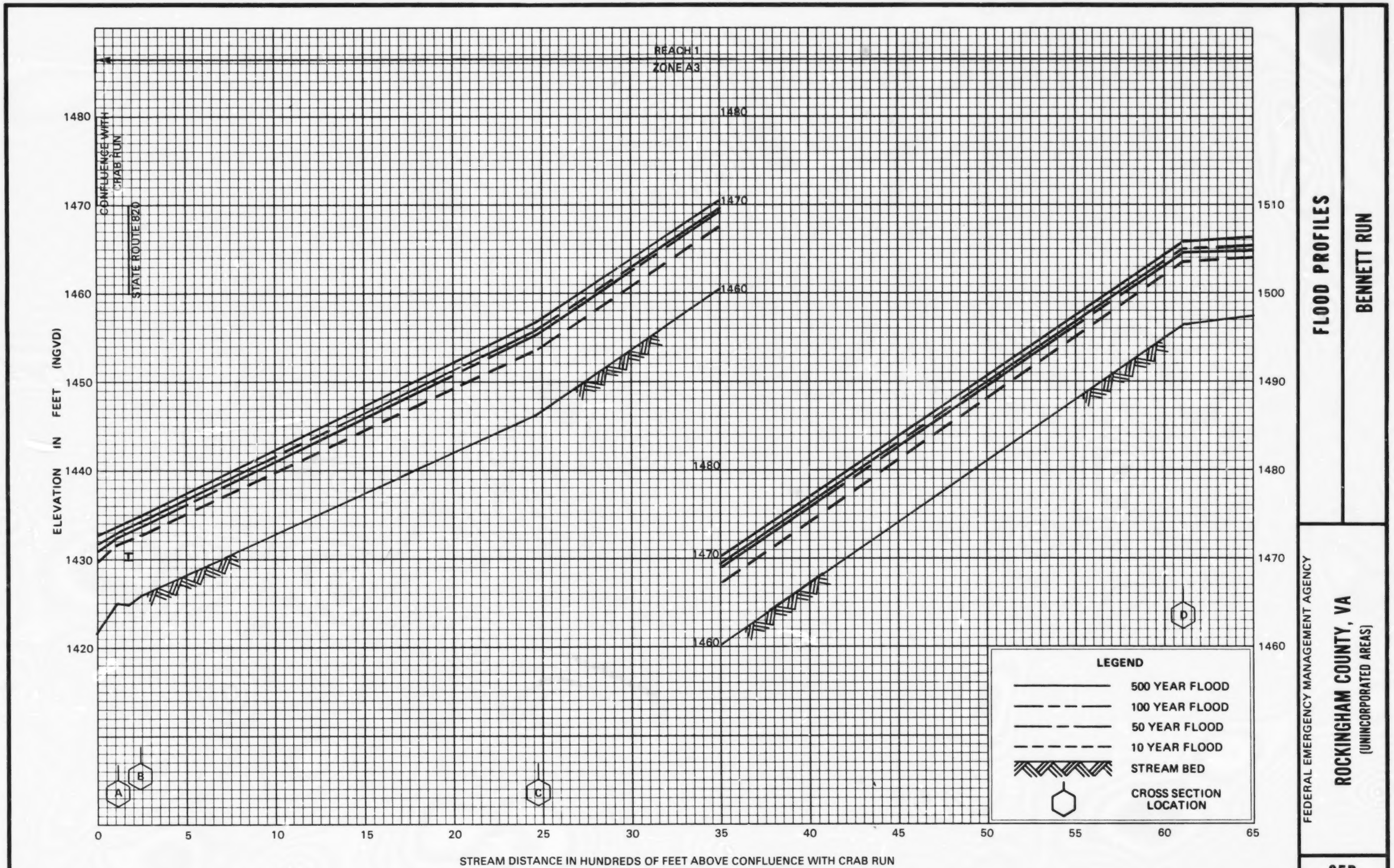

FLOOD PROFILES

BENNETT RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

35P

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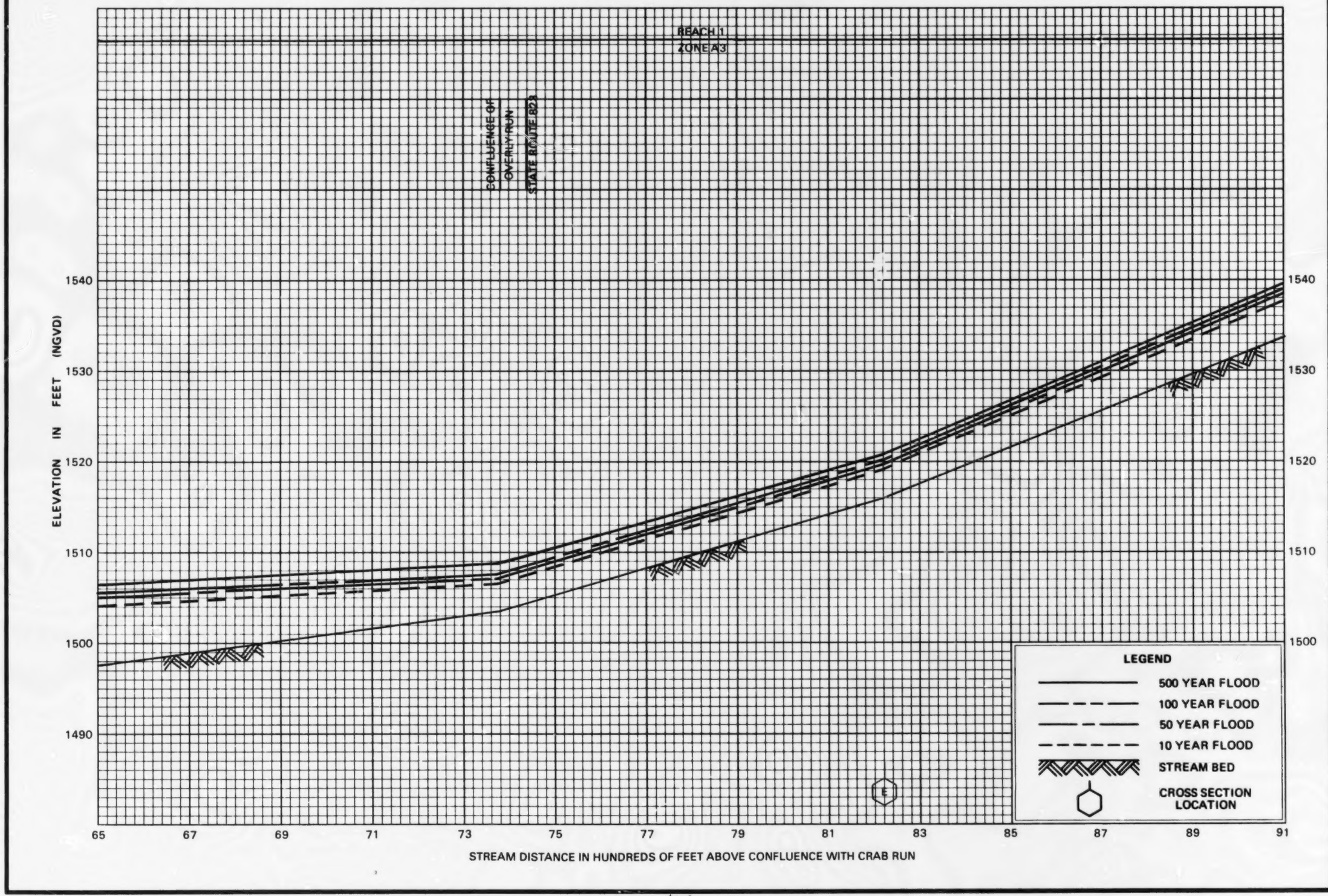


FLOOD PROFILES

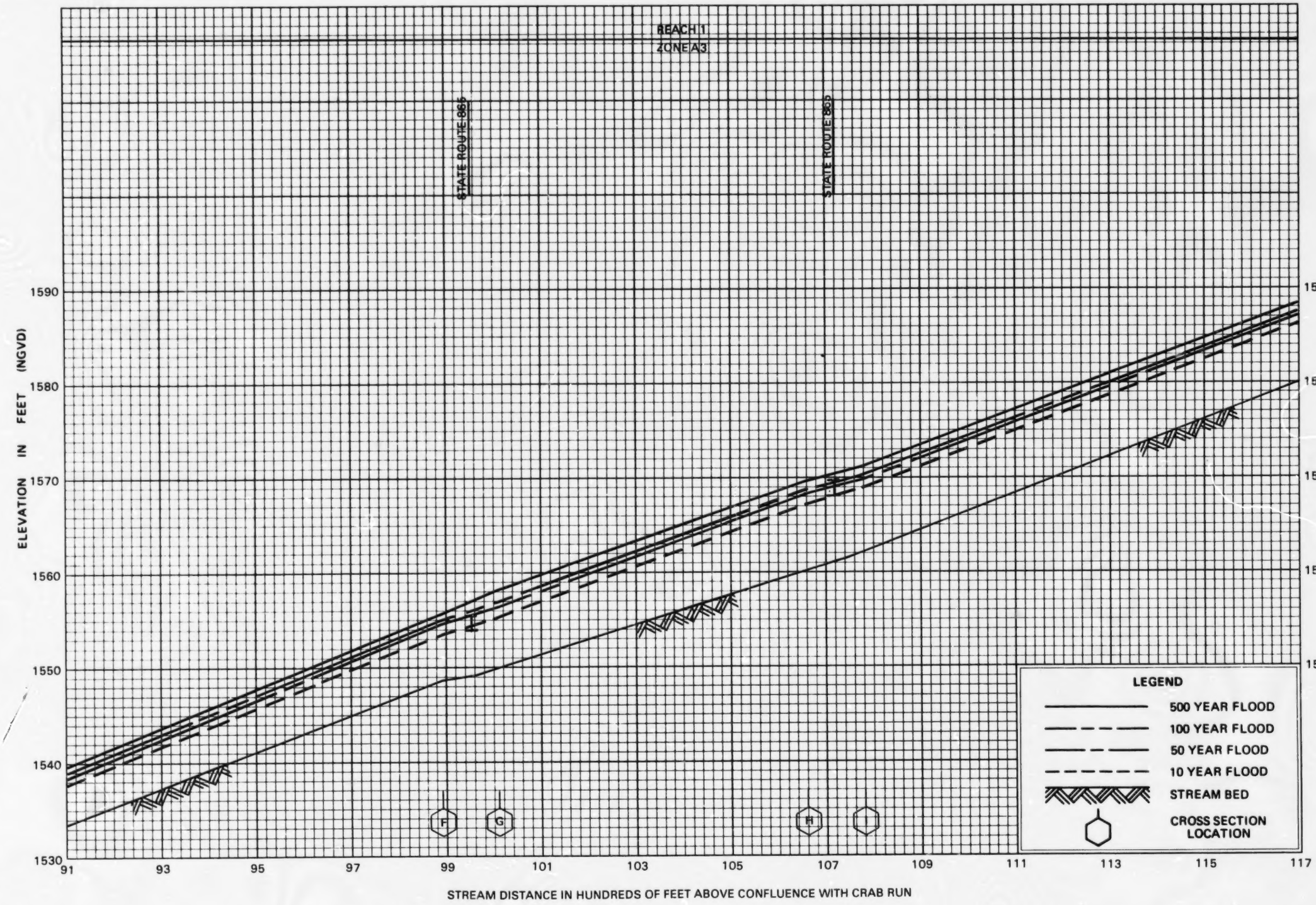
BENNETT RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

36P

BEST COPY AVAILABLE



FLOOD PROFILES

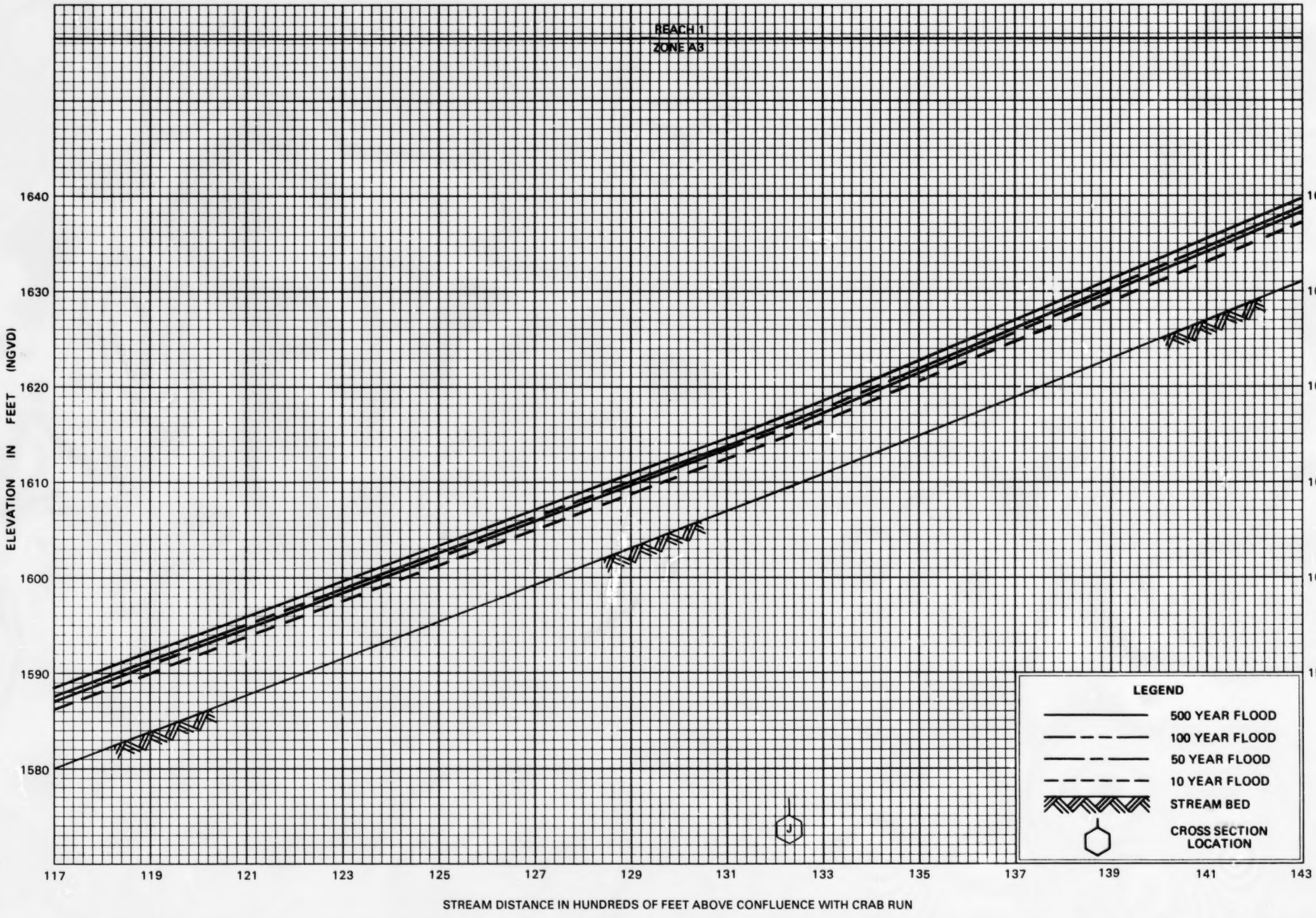
BENNETT RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

37P

BEST COPY AVAILABLE



FLOOD PROFILES

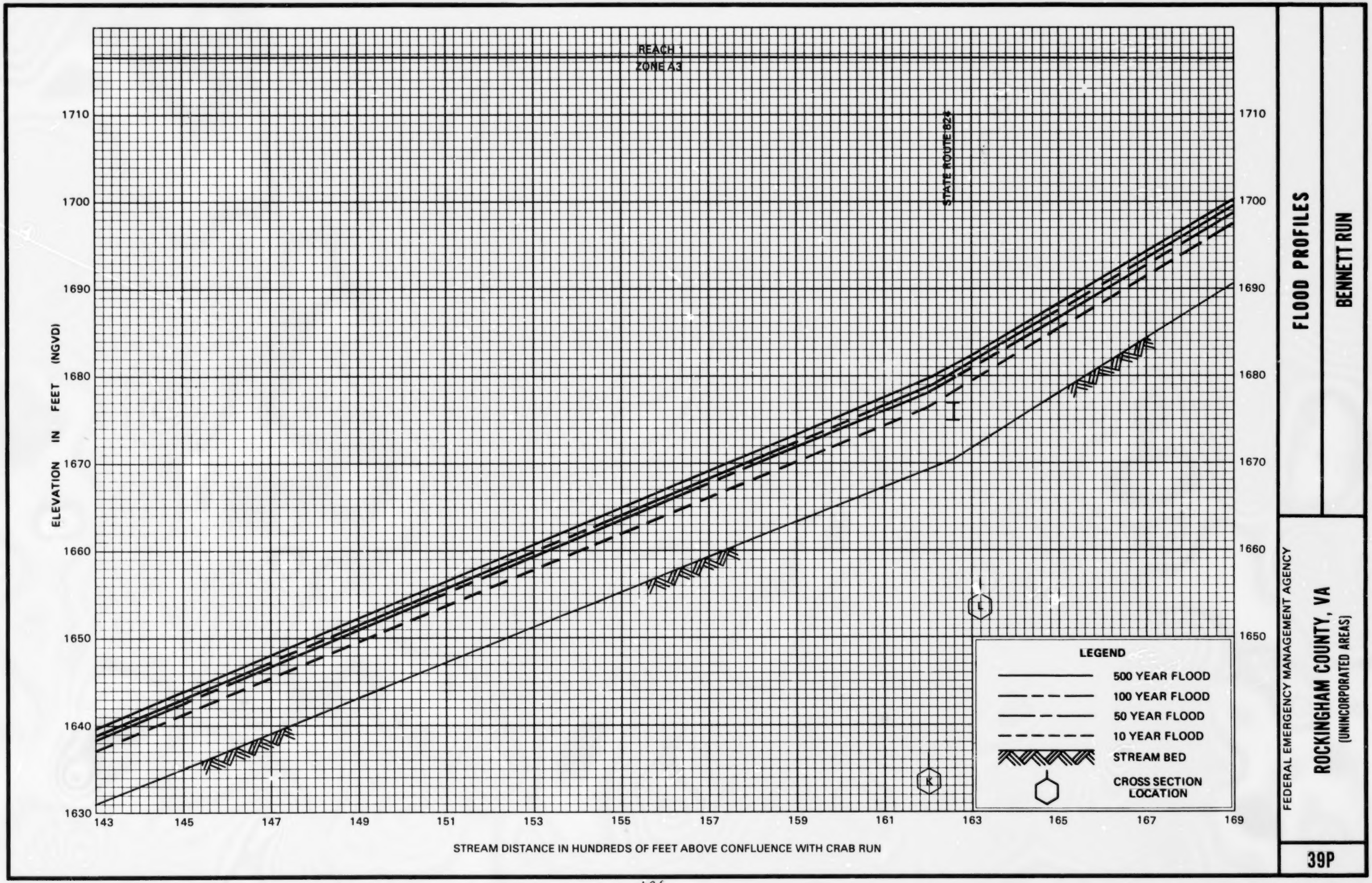
BENNETT RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

38P

BEST COPY AVAILABLE



FLOOD PROFILES

BENNETT RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

39P

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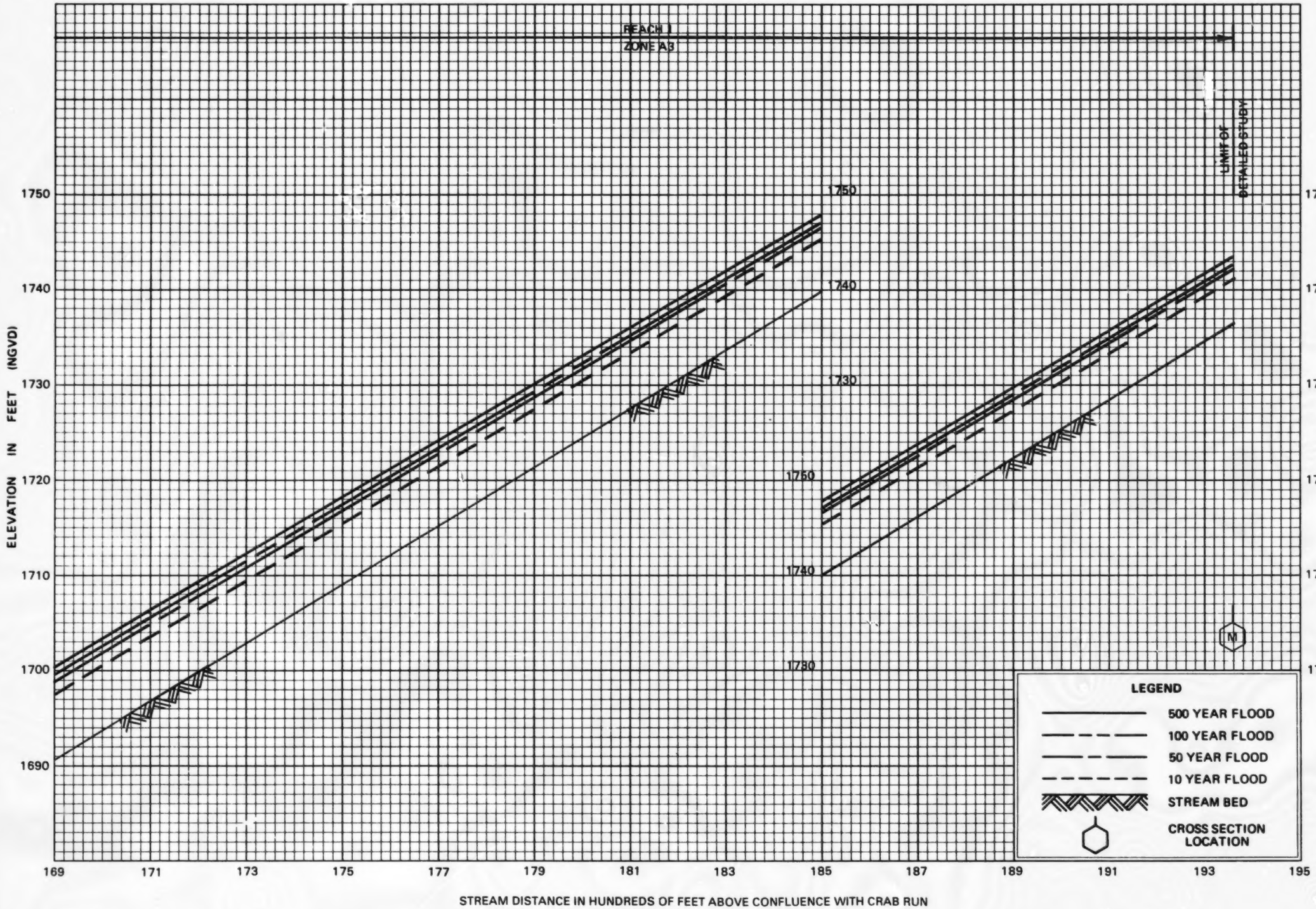

FLOOD PROFILES

BENNETT RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

40P

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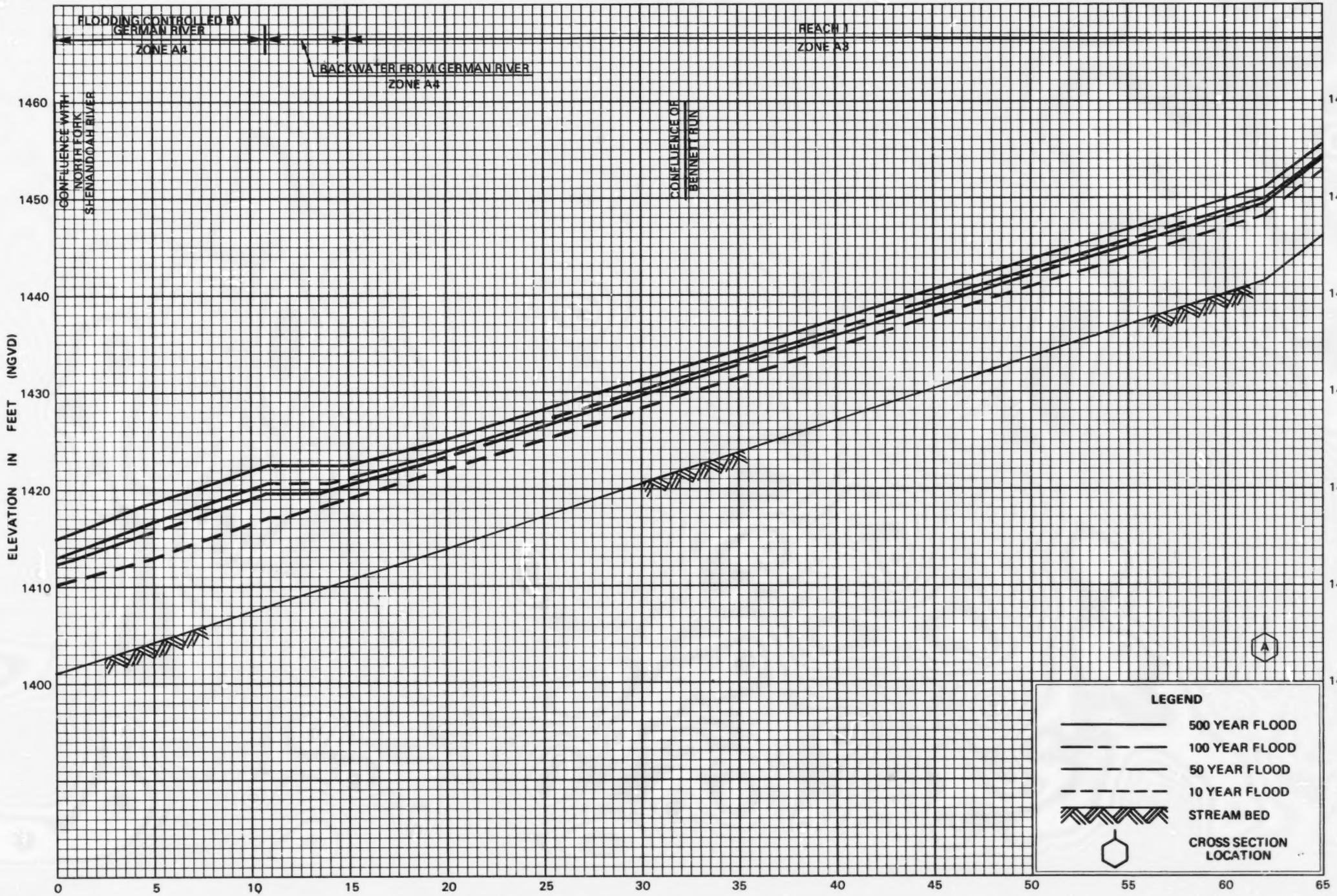

FLOOD PROFILES

CRAB RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

41P

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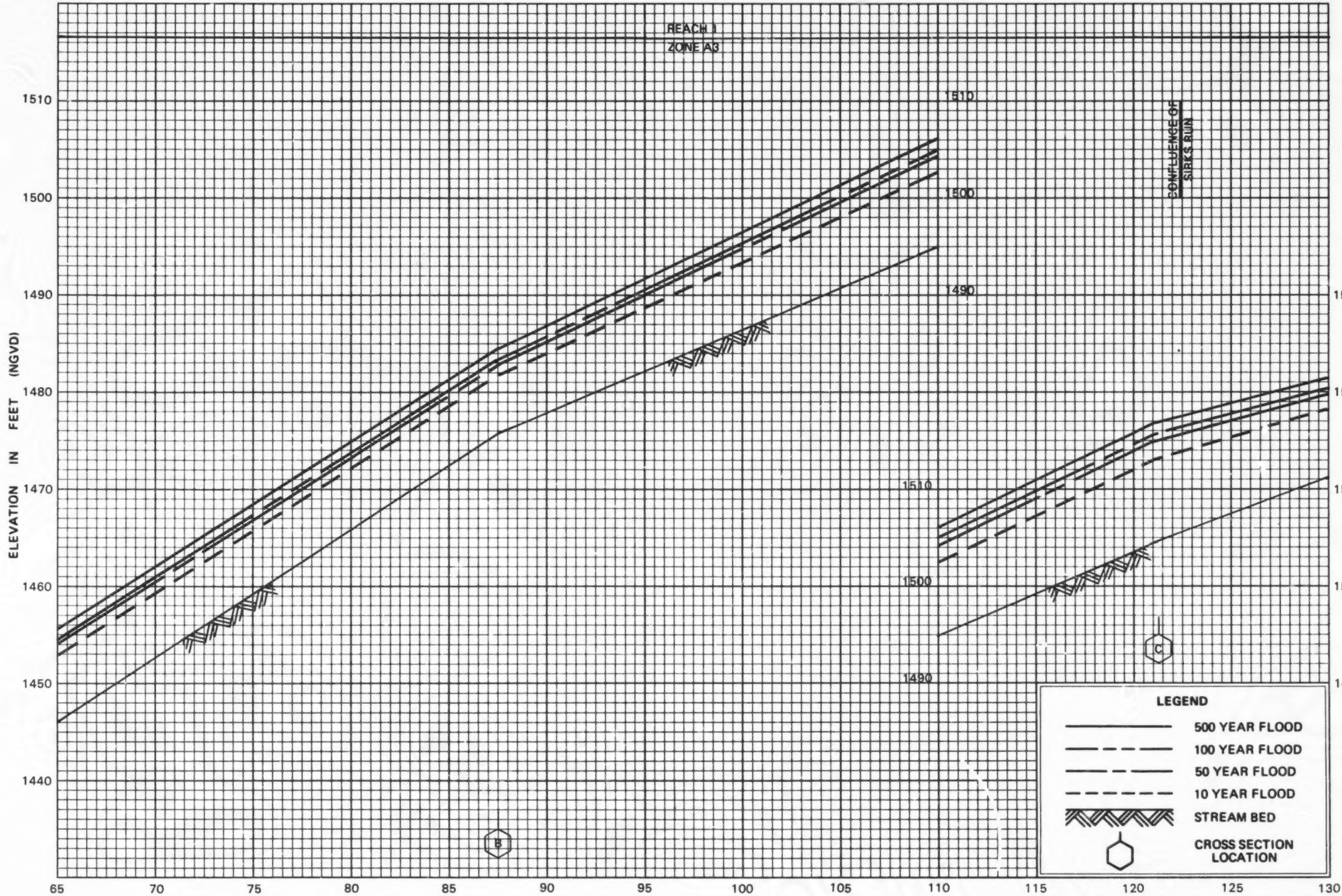

FLOOD PROFILES

CRAB RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

42P

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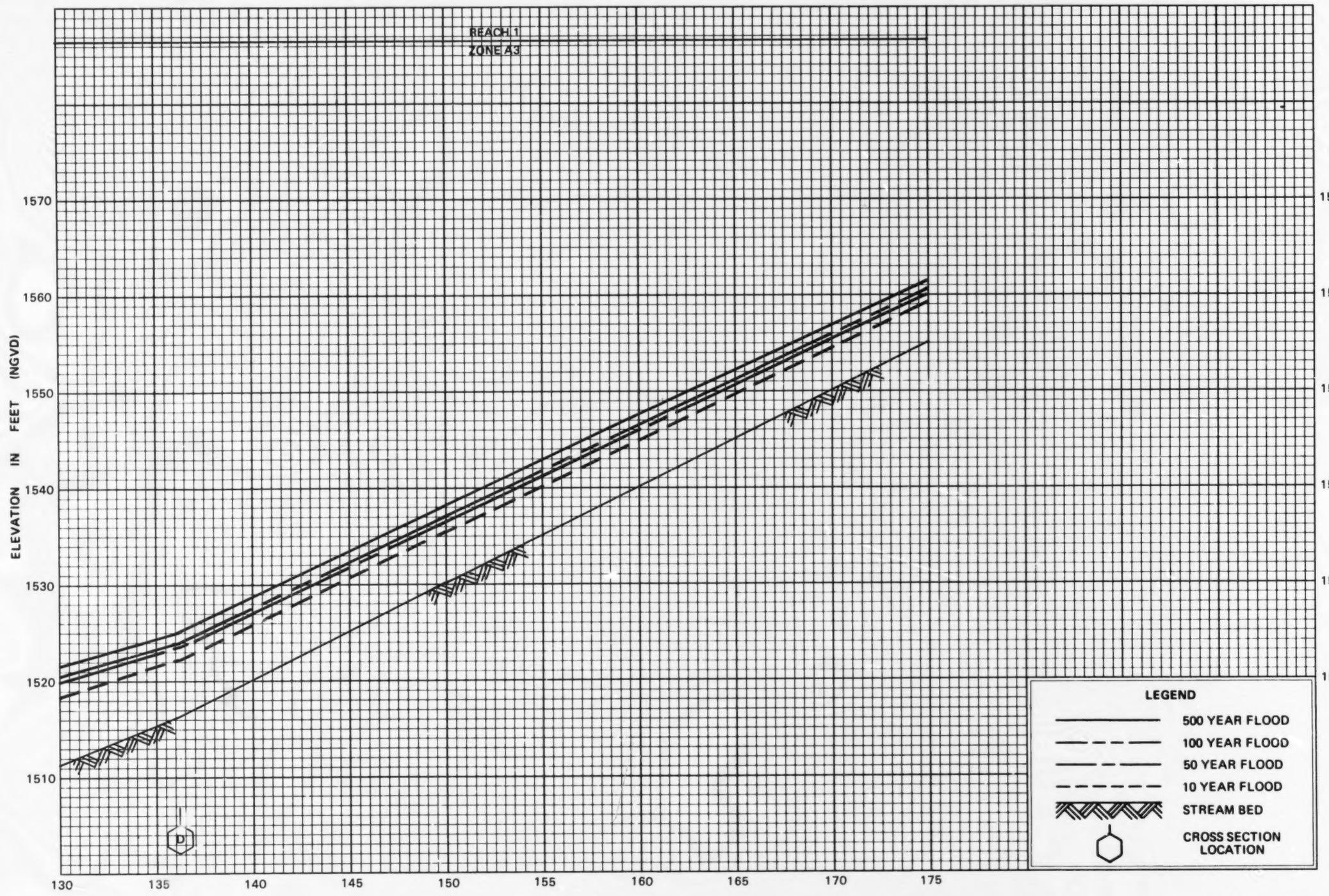

FLOOD PROFILES

CRAB RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

43P

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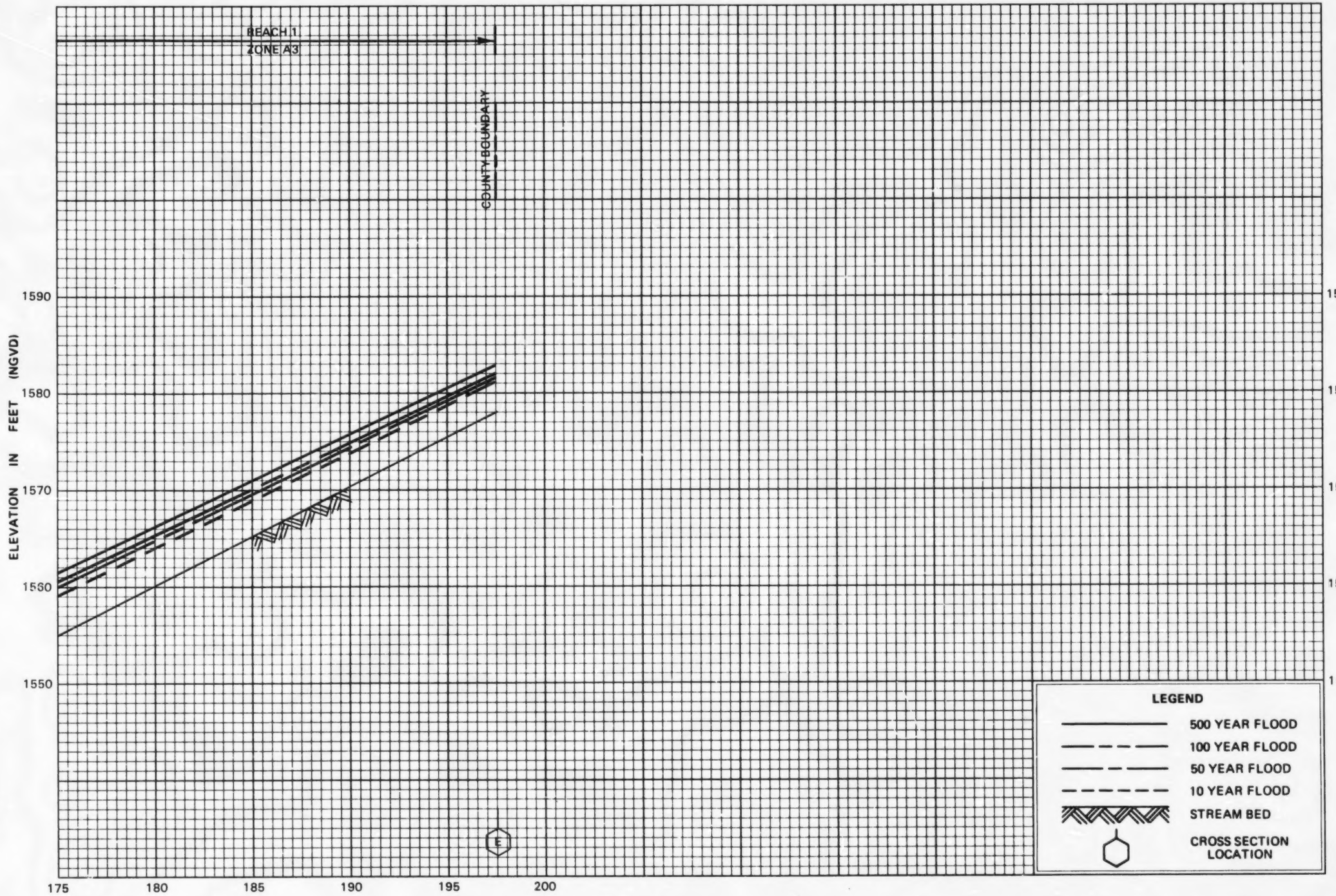

FLOOD PROFILES

CRAB RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA

(UNINCORPORATED AREAS)

44P

BEST COPY AVAILABLE

REACH 1
ZONE A3

CONFLUENCE WITH BENNETT RUN

ELEVATION IN FEET (NGVD)

1560
1550
1540
1530
1520
1510
1500

0 2 4 6 8 10 12 14 16 18 20 22 24 26

STREAM DISTANCE IN HUNDREDS OF FEET ABOVE CONFLUENCE WITH BENNETT RUN

A

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

OVERLY RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

45P

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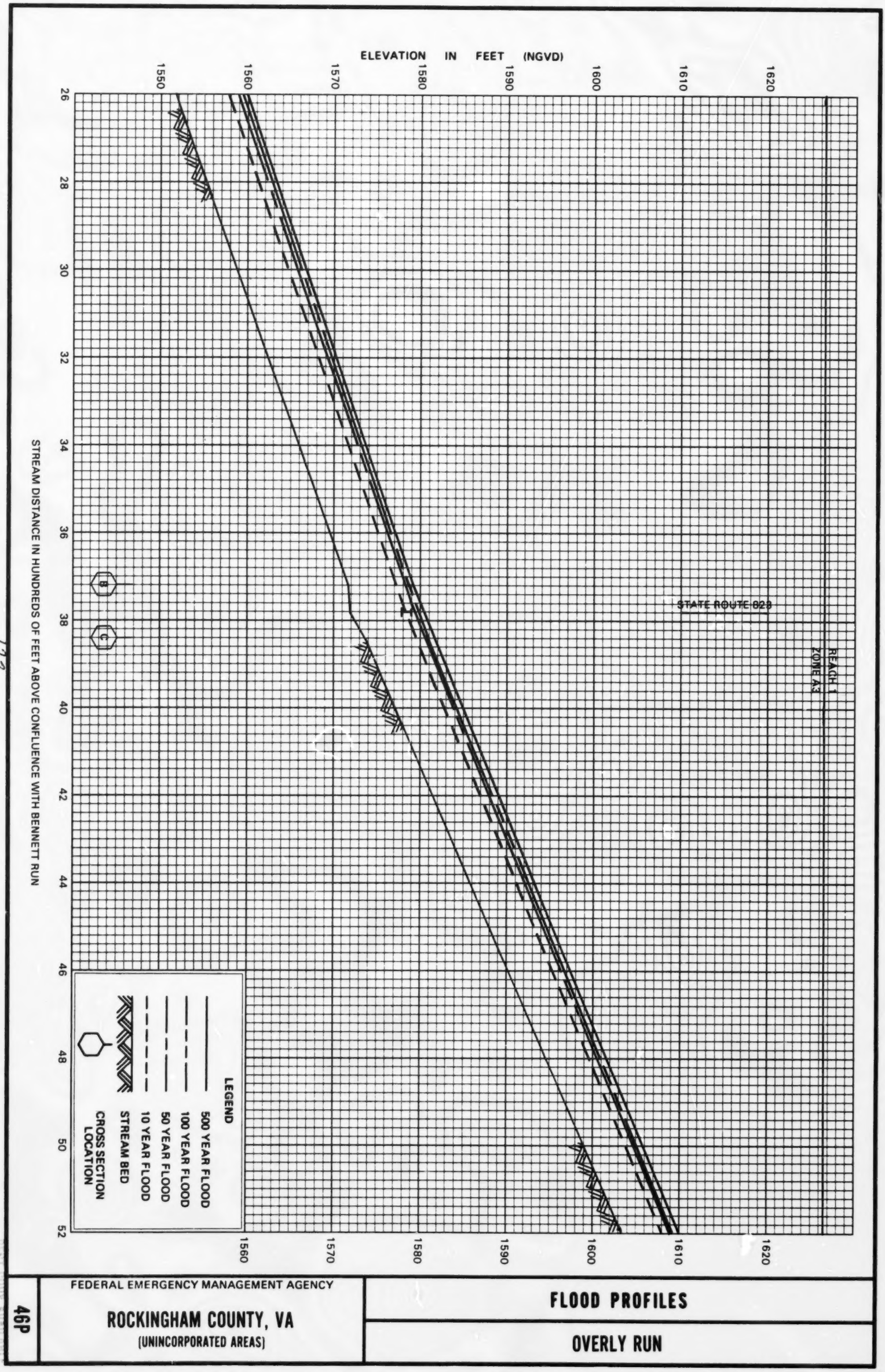

133

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

46P

FLOOD PROFILES

OVERLY RUN

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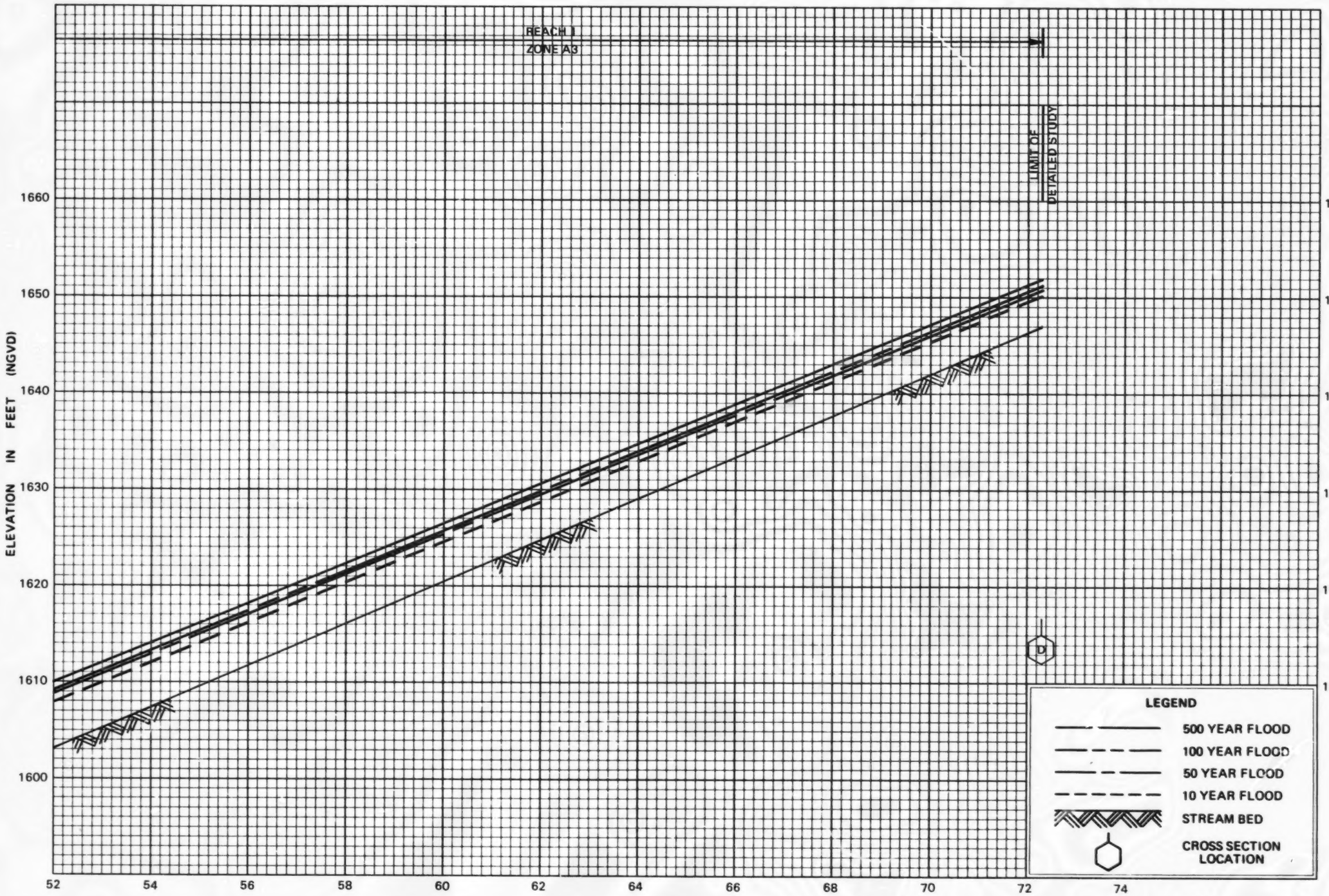

FLOOD PROFILES

OVERLY RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

ROCKINGHAM COUNTY, VA
(UNINCORPORATED AREAS)

47P

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